

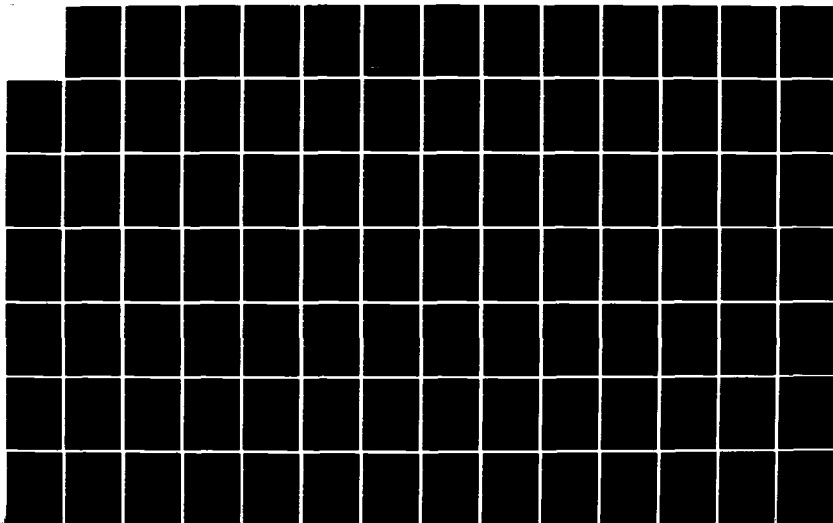
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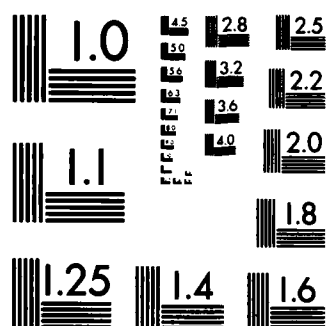
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STRATEGIC ANALYSIS AS THOUGH NONSUPERPOWERS MATTER

William Schwabe

June 1983

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Prepared for

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↙ Military strategy analysis seldom treats nonsuperpower behavior except in the simplest fashion. This obscures real uncertainty and disagreement about nonsuperpower roles in future armed conflict between superpowers. The study asks if a more dynamic treatment of nonsuperpower behavior in strategic analysis is feasible and desirable. It describes a rule-based nonsuperpower simulation and results of gaming several scenarios. The analysis reveals possible interactions between superpower and nonsuperpower decisionmaking potentially affecting deterrence stability, military performance, and alliance cohesion. It concludes that strategic analysis can and should consider nonsuperpower behavior as important independent variables. ↘

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PREFACE

This Note is part of a series of Rand Strategy Assessment Center (RSAC) documents aimed at improving strategic analysis. The Note explains why nonsuperpower behavior should be considered in strategic analysis and how it can be done.

The Note bases its findings on game runs made using the RSAC Mark II gaming system. The findings are particularly dependent on the Red, Blue, and Scenario Agent components of the Mark II gaming system. These components are described in greater detail in the following documents:

- W. M. Jones, J. L. LaCasse, and M. L. LaCasse, *The Mark II Red and Blue Agent Control Systems for the Rand Strategy Assessment Center*, The Rand Corporation, N-1836-DNA, forthcoming.
- W. Schwabe and L. M. Jamison, *A Rule-Based Policy-Level Model of Nonsuperpower Behavior in Strategic Conflicts*, The Rand Corporation, R-2962-DNA, November 1982.

The Rand Strategy Assessment Center is supported by the Director of Net Assessment in the Office of the Secretary of Defense and by the Defense Nuclear Agency under contract DNA0001-80-C-0298. The general RSAC approach to improving strategic analysis is described in

- P. K. Davis and J. A. Winnefeld, *The Rand Strategy Assessment Center: An Overview and Interim Conclusions about Utility and Development Options*, The Rand Corporation, R-2945-DNA, March 1983.

This Note is written for a varied audience of strategy and policy analysts. It questions how robust superpower strategies really are with respect to context and asks what contextual factors need to be considered in strategic analysis. It provides the most detailed discussion yet published on how RSAC models interact with one another in an analytic war game.

The text of the Note has been accepted by The Rand Graduate Institute in partial satisfaction of the requirements for the doctoral degree in policy analysis. Comments and suggestions on the ideas

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expressed here are welcome. Please contact the author or Paul K. Davis,
Director of the Rand Strategy Assessment Center.

SUMMARY

Behavior of countries other than the United States and the Soviet Union is seldom treated in military strategy analysis other than in the simplest fashion. This omission obscures the real complexity, uncertainty, and disagreement about possible nonsuperpower roles in future armed conflict between the superpowers.

This study explores the question of whether a more dynamic treatment of nonsuperpower behavior in strategic analysis would be feasible and would yield interesting results. There are two parts to the approach. First, we show feasibility by explaining how a rule-based model has been used at Rand to introduce replicable and systematically variable nonsuperpower behavior into analytic war gaming. Second, we demonstrate interesting results by describing widely differing gaming results produced by different assumptions about nonsuperpower behavior.

The analysis reveals possible interactions between superpower and nonsuperpower decisionmaking with the potential of affecting deterrence stability, military performance, and alliance cohesion. Because Rand computer models are written in English-like languages, we can show the assumptions about U.S., Soviet, and nonsuperpower behavior leading to these strategy-relevant interactions in a form that is understandable by readers who are not computer programmers yet is the exact form loaded into the computers.

The study concludes that a rule-based model of nonsuperpower behavior, operating in the context of an automated war gaming system, is both practical and relevant to strategy.

ACKNOWLEDGMENTS

This research was undertaken both as a component of Rand's Strategy Assessment Center program and as a dissertation submitted to The Rand Graduate Institute (RGI) in partial satisfaction of the requirements for a doctoral degree in public policy analysis. My dissertation committee included Bruce Goeller, who chaired the committee and taught me about the use of models in policy analysis; Carl Builder, who helped provide much-needed focus to the study; and Paul Davis, who kept me going when I might otherwise have given up.

My work on the Scenario Agent model began in collaboration with James Dewar, William Jones, and Thomas McNaugher. I led the effort to develop the current version of the model, working with Lewis Jamison, who conducted the interviews upon which many of the perception rules are based and who contributed to rule review and model documentation.

The gaming exercises used in this dissertation could not have been conducted without the assistance of William Jones, Patricia Berger, Arthur Bullock, Mark LaCasse, Jean LaCasse, Christie McMenomy, and Lawrence Painter. The exercise with teams playing Saudi Arabia and Israel additionally involved Yoav Ben-Horin, James Digby, Bruce Don, Lewis Jamison, Lorie Mylroie, Robert Perry, Roy Phillips, and Alan Platt. The techniques used herein draw upon previous work by James Winnefeld.

The following Rand colleagues, in addition to those mentioned above, participated in one or more reviews of Scenario Agent design and rules: Earl Boyd, Peter deLeon, James Gillogly, Morlie Graubard, Marcia Hunt, Eugene Justin, Margaret Krahenbuhl, Robert Levine, Lorie Mylroie, Nikola Schahgaldian, and David Stein.

The Note was edited by Jeanne Heller.

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CHAPTER 1

INTRODUCTION

EXPLANATION OF TERMS

Many of the terms associated with strategic analysis have alternative meanings or connotations. To avoid misunderstanding later, we need to understand the sense in which these terms will be used.

"Nonsuperpowers" are all nations other than the United States or the Soviet Union. They are sometimes referred to as "third countries" or "n-th countries" in discussions of superpower strategy. They are also referred to as "minor players" or "minor actors" in the context of political-military analysis and wargaming.

"Strategic" refers here to military strategy, which we shall loosely define as "policy for developing and using military forces to support national security objectives." Those forces may be nuclear or nonnuclear.

"Strategic analysis" refers here to a general analytic process, rather than to a particular analysis of a strategic issue or to the report of an analysis. It is limited, however, to analysis of future armed conflicts with the potential for nuclear combat between the superpowers.

The term "strategic analysis" is used here in the sense of "policy analysis of military strategy," that is, analysis which treats military strategy as a policy area whose domain is the development and use of military forces to support national objectives. The purpose of strategic analysis is usually to describe or evaluate alternative policies relating to military strategy. The alternative policies may be any of several types, such as force structure, deployment, or employment policies.

ARGUMENT IN BRIEF

This study argues that there is a *problem* in that the common practice of using single estimates of future nonsuperpower behavior in strategic analysis is faulty. The *significance of the problem* is that estimates of nonsuperpower behavior can drive results of strategic

analysis. There is a *solution to the problem* in that, in principle, a range of estimates of nonsuperpower behavior can be factored into strategic analysis using computer modeling. However, a *question* arises: given disagreements, uncertainties, and complexities, and given the large number of decision points, is it feasible to reflect nonsuperpower behavior in strategic analysis without combinatorial explosion; and are the results interesting or sterile? The *thesis* is that it is feasible, and that the results are interesting.

We will discuss each of the italicized parts of the argument in turn.

THE PROBLEM

Many military actions called for by a superpower strategy require some kind of action from allies and other nonsuperpowers. To analyze strategic alternatives requiring nonsuperpower action for their implementation, it is often necessary to make assumptions about whether that action will be forthcoming.

Intelligence analysts or others are called upon to estimate what nonsuperpowers will do in future, hypothetical situations of interest. In almost all cases, nonsuperpowers would have choices among alternative actions. Insofar as the future is uncertain, nonsuperpower action choices are uncertain.

A common way to treat uncertainty in analysis is to estimate the probability associated with each alternative. In most hypothetical situations of strategic interest there is no empirical basis for estimating such probabilities, and techniques have been developed for basing probability estimates on subjective judgment.¹ These techniques have not yet been widely adopted in strategic analysis, possibly because their subjective basis or their mathematical complexity is distrusted.

Lacking probability estimates, uncertainty can be dealt with through sensitivity analysis. Sensitivity analysis consists of seeking to determine the best policy or strategy under one set of assumptions (including assumptions about nonsuperpower behavior) and then

¹Recent Rand work in this area includes C. Williams and G. B. Crawford, *Analysis of Subjective Judgment Matrices*, R-2572-AF, May 1980, and C. T. Veit and M. Callero, *Subjective Transfer Function Approach to Complex System Analysis*, R-2719-AF, March 1981.

investigating the sensitivity of that solution to changes in some of the assumptions. There are two reasons why sensitivity analysis is not done as often as might be expected. First, it is expensive. Second, it reveals that policy solutions *are* sensitive to assumptions about uncertain factors. Such revelations make it more difficult (perhaps appropriately so) for policymakers to base their decisions on the analysis; therefore, there is an incentive to analysts *not* to perform sensitivity analysis.

In practice what usually happens is that specialists produce single estimates of future nonsuperpower behavior. If they associate a probability with such an estimate, it is almost universally ignored in the analysis using the estimate. As consensus is reached on a particular *subjective* estimate, it becomes viewed as *objective* by virtue of the consensus. Sensitivity analysis on a particular assumption of future nonsuperpower behavior is rare.

Individual estimates are often woven together into a *scenario* which serves as an overall context for the analysis, thus compounding uncertainty. The individual uncertain assumptions may blend into the fabric of the scenario.

SIGNIFICANCE OF THE PROBLEM

One of the more important examples of scenarios used in strategic analysis is the force-sizing scenario. Under current Planning, Programming, and Budgeting System (PPBS) procedures, the Secretary of Defense prepares annual Defense Guidance for the Joint Chiefs of Staff (JCS) and the services to use in preparing budget submissions. The Defense Guidance includes a standard force-sizing scenario for use in determining force size and structure requirements.

The standard force-sizing scenario is carefully designed to reflect a consensus on the nature and magnitude of the threat. It is conservative in some respects, but is by no means a worst-case scenario. In many respects it may be highly optimistic. This is defensible because its purpose is to plan support forces for "good cases" in which the United States and its allies are able to avoid early catastrophe and bring major combat forces to bear.

The JCS extracts a list of planning assumptions (also called planning factors) from the force-sizing scenario and prepares hypothetical plans to meet the threat posited in the force-sizing scenario and accompanying planning assumptions. These plans require (and justify) certain forces. Thus, the force-sizing scenario and planning assumptions become the basis for force requirements and corresponding budget requests.

More or less simultaneously, the Unified and Specified Commands (CINCs) are developing war plans for near-term conflicts. Not surprisingly, the programming scenario (which pertains to future forces and the threats) often is used in slightly modified form for this function also. In addition, plans intended to be usable at the present time often are based on many of the same scenario assumptions (e.g., warning time, allies, etc.) as the programming scenario. It is unusual to have many such plans for a given theater.

Focusing the policy process on a single scenario fosters a culture in which people act as though achieving consensus on a scenario makes the real future less uncertain. If several analyses are based on the same estimates, the appearance of certainty is reinforced. Excessive, unwarranted certainty in matters of strategy is potentially dangerous. Also, failure to perform sensitivity analysis on nonsuperpower behavior that might be influenced by U.S. foreign policy masks the value of such foreign policy and possible tradeoffs between military policy and foreign policy alternatives.

Other writers have warned that scenarios in general can drive the results of analysis.² One of the tasks of this study is to illustrate how scenario assumptions specifically about nonsuperpower behavior can markedly affect the results of strategic analysis.

The power of assumptions is well recognized by analysts supporting advocacy positions, and makes achieving consensus on assumptions difficult. One of the reasons consensus on assumptions is sought is to

²See S. Brown, "Scenarios in Systems Analysis" in E. S. Quade and W. I. Boucher, *Systems Analysis and Policy Planning: Applications in Defense*, The Rand Corporation, R-439-PR (Abridged), June 1968, pp. 298-310, and C. H. Builder, *Toward a Calculus of Scenarios*, The Rand Corporation, N-1855-DNA, January 1983.

promote consistency of estimates (and their supporting rationale) across scenarios and analyses. The objective is to get everyone in the advocacy process to play by the same rules, so that the policymaking process is perceived to be fair. The price paid is overstating the certainty of assumptions. The tension between rationality (acknowledging real uncertainties) and fairness (having everyone play according to the same assumptions) is analogous to the tension between efficiency and equity in economics.

The above does not mean to overstate the policy significance of the problem. Policymakers do consider how nonsuperpower behavior can affect basing, crisis management, and a host of other policy matters. But strategic policy *analysts* seldom adequately take nonsuperpower behavior into account, with the danger that advice given by analysts to policymakers may be deficient, misleading, or wrong. If policymakers come to think like policy analysts, they may become insensitive to factors, such as nonsuperpower behavior, that are not emphasized in formal analysis. On the other hand, if analysis neglects a factor policymakers know is important, policymakers may neglect analysis.

PROPOSED SOLUTION TO THE PROBLEM

Both rationality and fairness are promoted by expressing assumptions about nonsuperpower behavior in terms of rules of behavior rather than point estimates of actions, as is sometimes done by analysts. It promotes rationality because the rules constitute a first-order rationale (a simplified rationale that states the main reason for something's happening) for estimates of actions. It promotes fairness because explicit rules are more open to criticism than point estimates of action.

Recent advances in artificial intelligence computer languages³ make it possible to express behavioral rules in an English-like form that can be understood by strategists and can also be run as a computer model of national behavior. Computer modeling promotes consistency of results. The transparency of an English-like language promotes both rationality and fairness.

³See, for example, F. Hayes-Roth et al., *Rationale and Motivation for ROSIE*, The Rand Corporation, N-1648-ARPA, November 1981.

Understanding behavioral rules is not the same as agreeing with them. Uncertainty and differences of opinion are to be expected; therefore, there must be provision for *alternative rules*. This enables analysts to generate ranges of behavior to bracket uncertainty or otherwise to perform sensitivity analysis. Because too many uncertain rules can lead to combinatorial explosion, it is essential to organize rules into sets and to vary *patterns* of behavior.

In principle, the solution to the problem arising from use of single estimates of nonsuperpower behavior in strategic analysis is

- to express assumptions as explicit behavioral rules,
- to embody the rules in a readable computer model, and
- to use the model to factor uncertainty about nonsuperpower behavior into strategic analysis.

ASSESSING THE PRACTICALITY OF THE PROPOSED SOLUTION

The question is whether the proposed solution is practical. Given the uncertainty and complexity of future nonsuperpower behavior, it remains to be demonstrated that the proposed solution is feasible and that the results from applying it are interesting. This study attempts to demonstrate the practicality of the proposed solution.

The first task is to show it is practical to express assumptions about nonsuperpowers as explicit behavioral rules. Several approaches are possible.

One or more of the published theories of international behavior could be summarized in rules expressing behavioral assumptions. Each theory would yield a body of rules. A drawback to this approach is that no one theory is widely accepted among policy analysts or policymakers. Reducing different theories to alternative rules would be difficult because theoretical domains differ (some theories are broader than others). A theoretical approach might make unreasonable demands that an entire body of questionable theory be accepted in order to vary a particular behavioral assumption.

A possible nontheoretical approach would be to extract alternative behavioral estimates from intelligence sources and compile them as rules. A disadvantage of this approach is that the resulting rules would probably be classified, restricting the ease with which they might be reviewed and critiqued. To demonstrate the practicality of expressing behavioral assumptions as rules, it is not necessary to use real intelligence estimates.

A third possible approach (the one actually used) is to compile behavioral rules from interviews with political scientists and military analysts. The Rand environment is very conducive to this approach. Specialists are available to suggest plausible nonsuperpower behavior and to review rules developed from the suggestions.

The second task is to show the practicality of embodying behavioral rules in an understandable computer model. The approach taken has been to express most of the behavioral assumptions as so-called *production rules*,⁴ to write the rules in an English-like computer language, and to demonstrate the resulting computer model. Such modeling is believed to be practical because other rule-based models have been successful and English-like programming languages have been developed especially for rule-based modeling.

The third task is to show the practicality of using the model of nonsuperpower behavior in strategic analysis. Clearly, a model of nonsuperpower behavior is not sufficient in itself for strategic analysis. It must be used with other models or analytic techniques. Unfortunately, most other models used in strategic analysis are largely insensitive to nonsuperpower behavior. Nuclear force exchange models, for example, see nonsuperpowers only as targets or marginal contributors to weapons inventories.

One of the analytic techniques that is sensitive to behavior is *free-form gaming*,⁵ in which teams of players role-play competitive

⁴Production rules are of the form: if specified conditions are met, then take specified actions. For more on production rules, see D. A. Waterman, *An Introduction to Production Systems*, The Rand Corporation, P-5751, 1976.

⁵Free-form gaming is also called operational gaming. For a short discussion of operational gaming, see E. S. Quade, *Analysis for Public Decisions*, Elsevier North-Holland, Inc., New York, 1975, pp. 199-212.

political-military moves. However, much of what goes on in free-form gaming is not explicitly apparent but is hidden in participants' minds and in subtle group dynamics. Therefore, the influence of particular nonsuperpower behavior in a free-form game is difficult to isolate. It is also difficult (and expensive) to repeat free-form games under systematically varied behavioral assumptions. Whether the same or different players participate in successive games, their thought processes (mental models) change from game to game, and it is practically impossible to determine how changes in nonsuperpower behavior affect outcomes in different games.

What is needed is an analytic capability that is as controllable as analytic models and as sensitive to nonsuperpower behavior as free-form gaming. Such a capability is being developed at the Rand Strategy Assessment Center (RSAC).

The approach taken in this study is to design, run, and analyze a series of automated war gaming exercises that differ only in assumptions about nonsuperpower behavior. The analysis will relate game outcomes to the effectiveness of U.S. strategy. Variation in the effectiveness of U.S. strategy among the gaming exercises can result only from differences in assumptions about nonsuperpower behavior, and the practicality of the proposed methodology will therefore have been demonstrated--regardless of any possible rule deficiencies in the nonsuperpower or other RSAC models.

SCOPE AND ORGANIZATION

Although the logic used to derive the approach goes from rules to model to analysis, that is not the best sequence to follow in describing the results. The automated war gaming system constrains the design of its component models which, in turn, constrain the form of the behavioral rules. Therefore, we start with a description of the automated war gaming system, describe how a nonsuperpower model fits into it, and then describe the model and its rules.

For an earlier, more detailed discussion of free-form war gaming, see M. G. Weiner, *War Gaming Methodology*, The Rand Corporation, RM-2413, July 1959.

Chapter 2 describes methods for modeling nonsuperpower behavior in the war gaming context provided by the Rand Strategy Assessment Center. It describes how RSAC automated war gaming differs from traditional war gaming and how RSAC is being developed.⁶ It describes the desired role and characteristics of a nonsuperpower model in RSAC war gaming and concludes with a description of the Mark II version of RSAC's Scenario Agent model of nonsuperpower behavior,⁷ covering Scenario Agent architecture, capability, and use.

Having described the RSAC system, the design of the Scenario Agent model, and how nonsuperpower behavioral rules are embedded in the model, we will be prepared to show how nonsuperpower behavior can be included in strategic analysis.

Chapter 3 gives examples of nonsuperpower importance in the context of strategically interesting variations on a baseline scenario that is an unofficial proxy for the standard force-sizing scenario. It describes the baseline scenario and assumptions which may underlie it. A version of the baseline scenario generated by RSAC automated war gaming is first described almost exclusively in terms of superpower actions, as is normally done in strategic analysis. Then, nonsuperpower behavior in the baseline scenario and several RSAC-generated variations is discussed. What emerges is a complex interrelationship between nonsuperpower behavior and superpower decisionmaking that was almost entirely obscured in the earlier superpower-only description of the baseline scenario.

The chapter compares nonsuperpower importance across scenarios, showing that a full range of strategic outcomes can be generated by varying nonsuperpower behavior assumptions alone. It illustrates possible nonsuperpower effects on U.S. national objectives, including

⁶P. K. Davis and J. A. Winnefeld, *The Rand Strategy Assessment Center: An Overview and Interim Conclusions about Utility and Development Options*, The Rand Corporation, R-2945-DNA, March 1983, is the primary RSAC documentation.

⁷For a more detailed description of the model, see W. Schwabe and L. M. Jamison, *A Rule-Based Policy-Level Model of Nonsuperpower Behavior for Use in Strategic Analysis*, The Rand Corporation, R-2962-DNA, November 1982.

deterrence, military performance, and alliance cohesion. The chapter ends with some thoughts on nonsuperpower behavior as a U.S. policy variable.

Chapter 4 gives the conclusions of the study. The methodological conclusion is that a range of assumptions about future nonsuperpower behavior can be incorporated in strategic analysis by means of rule-based modeling and automated war gaming. The strategy-relevant conclusion is that nonsuperpower behavior is likely to have an important influence on the effectiveness of U.S. strategy.

CHAPTER 2

MODELING NONSUPERPOWER BEHAVIOR

THE CONTEXT: RAND STRATEGY ASSESSMENT CENTER

Since 1979 Rand has been developing a war gaming system called the Rand Strategy Assessment Center (RSAC) that can be used to evaluate strategic forces, assess force balances, and test operational plans.¹ Rand research was prompted by a growing awareness of the inadequacies of other methods of analysis--in particular, of standard strategic exchange models and calculations.

A general purpose strategic analysis system was called for, but such systems often encounter difficulties in development or use. They are usually not as good at particular tasks or problems as models developed specifically for those tasks or problems. And they may not turn out to be as flexible as planned.

RSAC developers hope to avoid these difficulties in two ways. First, the RSAC system should be as good as special purpose models because it is compatible with and will draw upon such models. RSAC models are designed to incorporate off-line analysis where such analysis is more credible than the general purpose models. The off-line analyses take the form of (a) "analytically structured campaign analysis" and (b) "scripted (i.e., parameterized) models."² Second, flexibility is ensured by RSAC compatibility with the most flexible of all models, the human mind. This compatibility is achieved by patterning the RSAC structure after that of political-military gaming and allowing human players to augment or replace computer models.

¹A. W. Marshall, "A Program to Improve Analytic Methods Related to Strategic Forces," *Policy Sciences*, Vol. 15, No. 1, November 1982, pp. 47-50.

²These concepts are described more fully in P. K. Davis and C. Williams, *Improving the Military Content of Strategy Analysis Using Automated War Games--A Technical Approach and an Agenda for Research*, The Rand Corporation, N-1894-DNA, June 1982.

The RSAC program is a multiyear research and development effort that is less than half complete. Though it is not yet possible to bring the full potential of the methodology to bear on a substantial policy problem, it is possible to describe the methodology and to illustrate its use.

The major RSAC program objectives are:

- To create an integrating framework for analyzing and discussing worldwide military strategy for conflicts up to and including general and prolonged nuclear war.
- To increase analysis realism by treating explicitly (a) many operational constraints, (b) many phenomena of war that are difficult or impossible to model quantitatively, (c) asymmetries in U.S. and Soviet objectives, attitudes, and military style, and (d) the role of third-country decisions in determining actual military operations.
- To provide tools to improve intuition about strategic dynamics involving decision points, interrelationships, and possible cascade effects, i.e., to provide policymaking assistance.³

To meet these objectives, RSAC researchers are engaged in the following activities:

1. Analytically structured campaign analysis.
2. Rule-based modeling.
3. Automated war gaming.⁴
4. Multiscenario analysis.⁵

³Davis and Winnefeld.

⁴M. H. Graubard and C. H. Builder, *Rand's Strategic Assessment Center: An Overview of the Concept*, The Rand Corporation, N-1583-DNA, September 1980, refers to the RSAC concept of automated war gaming as "variable degree of freedom gaming," emphasizing the capability to vary the human-computer model mix.

⁵Davis and Winnefeld include multiscenario analysis among the RSAC objectives, rather than activities.

Automated or computerized war gaming differs from traditional political-military war gaming by allowing some or all of the functions traditionally performed by people to be performed by computer programs. Computers have been used for several years to assist war gamers with computations, data maintenance, and communication. In automated war gaming, artificial intelligence computer programs can, with human supervision, substitute for human players. Humans may still play, if desired, and are necessary for checking program decisions in any case, but using the computer models speeds play and allows the analyst to have greater control over the variables affecting results of the war game.

Automated war gaming differs significantly from "computer-assisted war gaming,"⁶ which has been used for several years. Computer-assisted war gaming is free-form war gaming assisted by computers to facilitate communications, computations, and other functions. Computer-assisted war gaming has most of the limitations of manual, free-form games,⁷ including lack of explicit assumptions and processes, difficulty in replicating results in order to verify them, and difficulty in systematically varying assumptions for comparative analysis. In contrast, automated war gaming involves a system of computer programs acting as *agents*, replacing human competitive players and some game control personnel, but augmented, as desired, by human players. The demands of the computer program agents for explicit rules, assumptions, and communications conventions make the system much better suited than free-form gaming for analysis.

The basic structure of a traditional political-military war game, as shown in Fig. 2.1, includes Blue and Red major-player teams (representing the United States and the Soviet Union) and a control team. Blue and Red make moves consisting of force orders processed by the control team and requests addressed to the other major player or to nonsuperpower countries represented by the control team. The control

⁶See, for example, the XRAY games conducted by E. W. Paxon and described in G. H. Fisher, *Cost Considerations in Systems Analysis*, The Rand Corporation, R-490-ASD, December 1970, pp. 286-301.

⁷See P. deLeon, "The Analytic Requirements for Free-Form Gaming," *Simulation & Games*, Vol. 12, No. 2, June 1981, pp. 201-231, for an extensive discussion of these limitations.

Blue Team

Control Team

Red Team

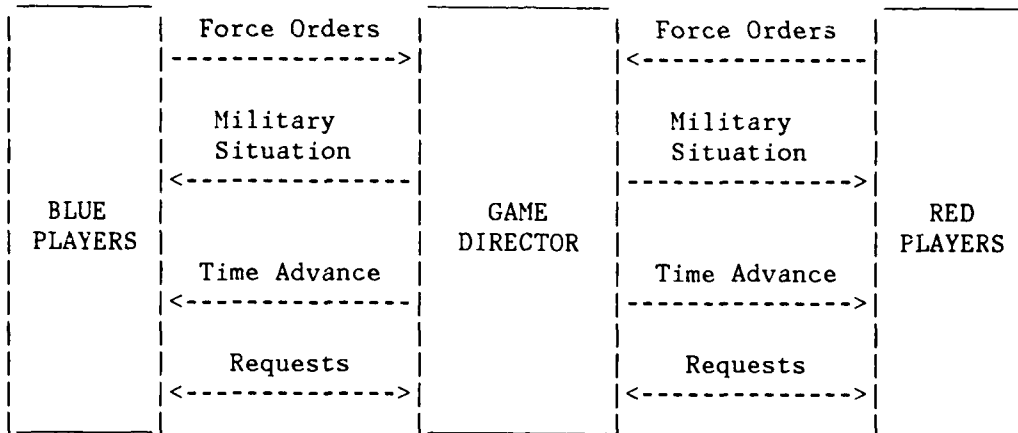


Fig. 2.1 -- Traditional political-military war game structure

team provides current information on the military situation, generates responses from nonsuperpower countries, and advances time. Blue and Red requests may solicit information or action.

RSAC automated war gaming divides the control team into Force Operations and Systems Monitor, as shown in Fig. 2.2. Force Operations programs process Blue and Red force orders and provide information on the military situation. Systems Monitor advances time and communicates requests between Blue and Red. Blue and Red can be played by automated agent programs or by human players.

THE DESIRED ROLE OF A NONSUPERPOWER MODEL

The RSAC design shown in Fig. 2.2 can be improved by adding a model of nonsuperpower behavior, as shown in Fig. 2.3. The desired role for a nonsuperpower model consists of four functions:

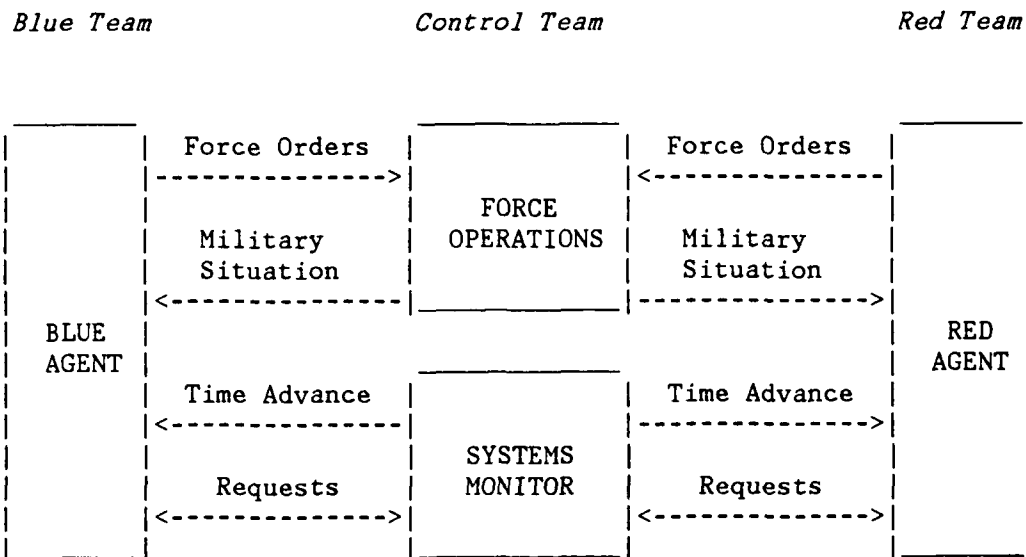


Fig. 2.2 -- Automated gaming structure without nonsuperpower model

- Bookkeeping
- Intelligence
- Nonsuperpower simulation
- Scenario development

Bookkeeping

The nonsuperpower model should provide Blue and Red a summary of the political situation by country as one of the standard inputs to Blue and Red decisionmaking. This summary should display aspects of each country's posture that could be assumed to be public knowledge. Providing the political situation is essentially a communications function in which the nonsuperpower model reformats information already in its data base.

Blue Team

Control Team

Red Team

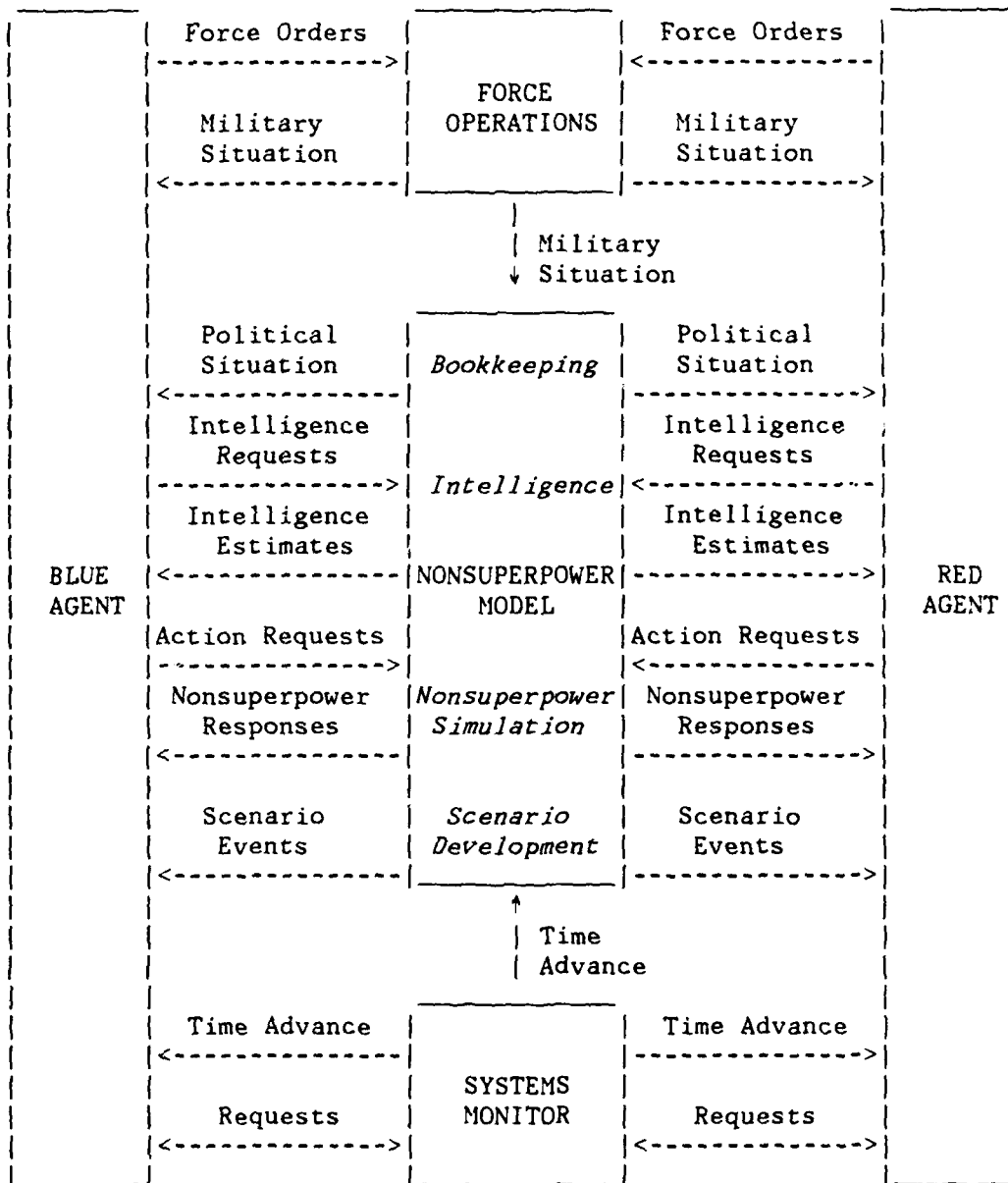


Fig. 2.3 -- Role of nonsuperpower model in automated gaming

Intelligence

During decisionmaking, Blue and Red may request additional information about nonsuperpower countries. The nonsuperpower model should serve as an intelligence source in responding to such requests. In this role the nonsuperpower model can provide descriptive political estimates or predictive national posture projections conditional on stated assumptions. Descriptive estimates beyond those available in the summary could include a country's broad political or economic orientation, its potential enemies, whether it is opportunistic or assertive, its relationship to regional or other nonsuperpower leadership, its perceived threat and opportunity, and rationale for its current posture.

Nonsuperpower Simulation

Blue and Red moves may include requests to nonsuperpower countries to change their national postures. Acting as the nonsuperpower countries, the nonsuperpower model should take these move requests into account, along with the military situation provided by Force Operations, in determining nonsuperpower response. In processing nonsuperpower moves, the nonsuperpower model should function the same as in processing requests for intelligence projections, except that the results of a move are entered into the nonsuperpower model data base, but results of a projection are not.

The nonsuperpower model should generate a record of response events with a first-order rationale trace. This record should be available to analysts during gaming. Responses should be reflected in the new political situation summary.

Scenario Development

As in manual gaming, the game director or supervisory analyst may develop the game scenario as the game progresses by generating particular nonsuperpower actions. This is a device for channeling the game within bounds that are appropriate for the problem being analyzed.

MODEL CHARACTERISTICS DESIRED

Characteristics desired of any model used in analytic war gaming include flexibility, transparency, and credibility.

Flexibility

Flexibility may be defined as being both general and systematically variable.

The model should be general in the sense of providing some minimal level of treatment for all countries in all phases of conflict from crisis to war termination. It should also be general in the sense of being compatible with additions of more detailed behavior for specific countries, as may be required for particular analyses.

The behavior estimated by the model should be variable, so it can cover the range of plausible estimates and thereby avoid the difficulties with single estimates discussed earlier. The model should permit behavior to be varied systematically to facilitate comparative analysis, including sensitivity analysis.

Transparency

Because strategy is controversial, it is essential that the model be transparent (i.e., that its inner workings are visible). Most models are transparent to their developers, but opaque to others.⁸

One of the well-known problems with using computer models to assist policymaking is that policymakers and other interested parties usually cannot understand the code in which the models are written. A partial solution would be to write the models in English. But this would only be a partial solution because there is more to understanding a model than being able to read its code. Unfortunately, computers cannot run programs written in English. Another solution might be to design a computer language that looks like English and, hence, could be read and understood by English readers. One such language is called ROSIE.⁹

⁸For a more general discussion of the need for transparency in policy models, see Comptroller General of the United States, *Models, Data, and War: A Critique of the Foundation for Defense Analyses*, General Accounting Office, PAD-80-21, March 1980.

⁹ROSIE, a trademark of The Rand Corporation, is an acronym for

The added transparency made possible by using an English-like language can be illustrated by comparing a process in a model written in FORTRAN with a similar process written in ROSIE. FORTRAN models, for example, can compute measures of threat as a summed product of factors, which might be written in mathematical notation as

$$OPOW = \sum b_g \cdot HOST_{jt+1} \cdot TFC_{jt+1}$$

where OPOW is threat from an opposing alliance, b_g is a weighting factor, HOST is a measure of hostile communication (intent), and TFC is a measure of opposing capabilities.¹⁰ The FORTRAN expression for the product in the previous expression might be

$$B9 * HOST(J,T+1) * TFC(J,T+1).$$

An expression of this type is not meaningful to many of the regional security specialists with whom RSAC analysts wish to communicate. In this example the difficult issues requiring qualitative judgment are buried in the definitions of B9 and TFC.

Treating the same problem with a rule-based approach using ROSIE, a typical statement might be

If the actor's opponent is effective in the actor's region
and the actor's opponent does intend to attack the actor,
let the actor's threat be grave.

Clearly, "effective," "does intend to attack," and "grave" must all be defined, but the mode of expression is natural and brings definitional issues explicitly to the foreground.

One must not overstate the naturalness of expression in ROSIE. Although carefully written programs in ROSIE do read naturally (for the most part), some ROSIE expressions do not operate as an English reader

Rule-Oriented System for Implementing Expertise. The rationale for developing an English-like computer language is given in Hayes-Roth et al.

¹⁰This example is from the SIPER model, as described in S. A. Bremer, *Simulated Worlds*, Princeton University Press, Princeton, 1977, p. 50.

would expect. If, for example, we were to write the ROSIE expression, "assert every enemy is a threat," a program operating on the expression would find every enemy in its data base and automatically add to the data base an assertion that each such enemy is a threat. This is what an English reader would expect. If we were later to write the expression, "assert country-x is an enemy," ROSIE would *not* automatically infer what an English reader might expect, that "country-x is a threat." This is because ROSIE evaluates "every" based on assertions currently in its data base, and "country-x is an enemy" was not put into the data base until after "every" was evaluated. If, however, we had written "assert any enemy is a threat" instead of "assert every enemy is a threat," the subsequent assertion that "country-x is an enemy" *would* automatically infer "country-x is a threat." The precise reason for this need not concern us here; it is explained in Hayes-Roth et al., pp. 24-26. What is important is that readers understand that English and ROSIE are different languages. They each have their own subtleties. English is, of course, the far richer language. The English-like quality of ROSIE is useful because it gives English readers an intuitive understanding of a ROSIE program. ROSIE program writers labor to ensure that the intuitive understanding is substantially correct. This may involve a careful balance of expressions that could be upset if the program were altered by someone other than an experienced ROSIE programmer with a good understanding of the program.

In addition to readability of the program code, transparency involves being able to trace from model output (game results) back to the underlying logic (programmed rules). Some computer languages have features to help such tracing. ROSIE, for example, has the following commands that can be used for interactive tracing:

- TRACE Displays variable values on entering and exiting specified program modules.
- SHOW Displays specified files, rule sets, or rules.

FIND Displays instances of specified words or phrases in files, rule sets, or rules.¹¹

Credibility

Transparency helps establish a model's credibility, but credibility requires more than transparency.

Recall that we are not necessarily trying to show that any one estimate of nonsuperpower behavior is the correct one, to the exclusion of other plausible behavior. Rather, we are trying to incorporate a range of plausible behavior estimates into strategic analysis. Credibility, then, comes from addressing feasible and reasonable behavior. As earlier writers put it,

Credibility requires that each action included must be feasible and reasonable in the context of the events which have preceeded it and those which will follow.

Credibility acts really as a negative criterion, or as a constraint. Thus, while the war described becomes a possible war, no attempt is made to present it as the most likely one.¹²

Losing credibility by including irresponsible nonsuperpower behavior may be just as bad as failing to gain credibility by treating feasible and reasonable behavior.

Credibility may also demand completeness of treatment, that is, demonstration that a full range of equally plausible, strategically significant behavior has been considered.

¹¹These commands and related terms are explained fully in J. Fain et al., *The ROSIE Reference Manual*, The Rand Corporation, N-1647-ARPA, December 1981.

¹²J. W. Ellis, Jr. and T. E. Greene, *The Contextual Study: A Structured Approach to the Study of Political and Military Aspects of Limited War*, The Rand Corporation, P-1840, May 1960.

Behavior To Be Treated

Many types of nonsuperpower behavior could be modeled. However, we are interested only in that behavior that might be important to strategic analysis. Such behavior includes the side a nonsuperpower takes in an armed conflict, access it grants to allied military forces, involvement of its own forces, and its resolve to continue on its present course. Some nonsuperpower behavior is motivated by nonsuperpower relationships with superpower objectives ("superpower-centric" behavior). Other behavior is motivated by an opportunistic desire to settle accounts with historical or potential enemies. Still other behavior may be motivated by a nonsuperpower's own assertive strategy. Regional leadership relationships may be a factor, as may threat, opportunity, and urgency perception.

U.S. strategic analysis generally makes nominal assumptions that guarantee nonsuperpower behavior will not importantly affect outcomes. A nonsuperpower model operating within the RSAC context should be able to treat both the nominal assumptions and alternative assumptions that might importantly affect outcomes.

Superpower-centric Behavior

What interests U.S. strategists most about nonsuperpowers is how they respond to U.S. objectives. Any model of nonsuperpower behavior operating in the RSAC context must model such superpower-centric behavior.

Side. The most basic behavior in a conflict situation is taking a side or refusing to do so. Each superpower is sensitive to world opinion and may be less eager to press a point militarily if few other countries are on its side. Siding with a superpower may bring benefits to a nonsuperpower, but it may also bring danger, such as becoming a target of the other superpower.

The nominal assumption in strategic analysis is that nonsuperpowers take the same side in conflict as they do in peacetime. Thus, France, Saudi Arabia, and the People's Republic of China (PRC) are assumed to side with the United States against Soviet aggression in Europe, the Persian Gulf, and East Asia, respectively.

This may not always be the case, however. Nonsuperpowers do not always perceive aggression the same way the United States does. Furthermore, it is in the interest of each superpower to attempt to follow Sun Tzu's¹³ advice to attack the enemy's alliances, with the purpose of inducing an enemy's peacetime allies to change sides or become neutral in serious crises and conflicts.

Invitation. A nonsuperpower that is threatened may invite a superpower in to defend it. In recent times superpowers have been reluctant to go into a country without an invitation from the host government or a faction claiming legitimacy. Lacking an invitation, the superpower risks international censure or local opposition within the country. This may be decisive to the superpower, particularly in lower levels of armed conflict.

The nominal assumption in U.S. strategic analysis is that the United States will be invited into the territory of seriously threatened allies and that the Soviet Union will not be deterred from projecting forces by lack of an invitation.

It is not implausible that certain elements of U.S. strategy, such as the Carter doctrine to defend U.S. interests in the Persian Gulf, could fail without invitation into threatened countries. Countries inviting a major superpower military presence into their territories risk becoming a target of the enemy and (to greater or lesser degree) a vassal of the friend.

Access. U.S. power projection to Europe, Southwest Asia, or elsewhere requires prompt access to nonsuperpower territory (land, airspace, or territorial waters), facilities (bases or ports), and support services (cargo handling, replenishment, or billeting). This includes access needed for logistics and may include access needed for launching or supporting combat missions.

The nominal assumption is that needed access is promptly granted in accordance with treaties, host nation access and support agreements, and ad hoc arrangements. If, however, access were not promptly forthcoming from countries such as the United Kingdom (UK), Belgium, the

¹³Sun Tzu, *The Art of War*, Samuel B. Griffith (trans.), Oxford University Press, New York, 1963, Book III.

Netherlands, and the Federal Republic of Germany (FRG), Spain, Portugal, France, Morocco, Turkey, Egypt, or Saudi Arabia, U.S.

strategies for reinforcing Europe or establishing a deterrent force in Southwest Asia would be jeopardized.

Military Involvement. Nonsuperpowers may be willing to involve their military forces in an armed conflict. Mutual defense treaties such as NATO and the Warsaw Pact presuppose allied military involvement.

The nominal assumption is that treaty commitments will be honored. The assumption of allied involvement is fairly unimportant to nuclear deterrence or war fighting strategy directly; however, situations seriously stressing nuclear deterrence--such as armed conflict in Europe--could well be affected by nonsuperpower willingness to commit their own forces.

Resolve. Although warfare has a momentum of its own, countries reserve to themselves the right to change their policies as circumstances change, including the right to change side, to terminate an invitation, to revoke access, and to cease military involvement.

The nominal assumption is that nonsuperpowers do not reverse themselves in mid-course.

Interference. There are two basic ways nonsuperpowers could interfere with superpower strategies. First, they could oppose a superpower's actions. Libya, for example, could oppose U.S. deployment of forces through the Mediterranean Sea. Second, they could interfere with superpower strategy as a secondary (and perhaps unintended) effect of pursuing their own interests. A country with its own nuclear weapons capability, for example, could escalate a situation beyond the U.S. ability to moderate it.

The nominal assumption is that neither type of interference occurs, or if it occurs, its effects are negligible.

Opportunistic Account-Settling Behavior

Conflict situations between the superpowers may present nonsuperpowers with an opportunity to clear their own national agendas. One such type of opportunistic behavior is to attack a potential enemy in order to settle accounts. The opportunity may be attractive because the potential enemy's superpower ally is distracted elsewhere or because

the potential enemy is already under attack. Such opportunistic behavior may help or hinder superpower strategy, but it is not normally considered in strategic analysis.

Assertive Own-Strategy Behavior

Nonsuperpowers may have their own strategies. Nuclear-capable countries such as France may attempt a strategy of independent nuclear deterrence. Countries may take the initiative in appealing to a nonsuperpower to defend them or to attack the opposing superpower's forces or homeland. Countries not adequately defended by a superpower ally may capitulate or change sides. The nominal assumption in strategic analysis is that none of these things happen.

Following Regional Leadership

Nonsuperpower behavior may be constrained by regional leader/follower relationships. One manifestation of this might be a reluctance for a regional follower to surpass its leader in cooperating with a superpower. Examples include possible reluctance by Kuwait to allow a U.S. military presence until Saudi Arabia does so. Another manifestation might be response to regional leader requests.

Threat Perception

There is an advantage to treating threat perception separately from response. What is considered threatening is often less controversial than how a nation might respond to some given level of perceived threat. Also, a nation's perceptions (including threat) constitute a first-order rationale for its response actions. Thus, separating perception from response makes the model more transparent.

Much nonsuperpower behavior in armed conflicts between superpowers would, presumably, be in response to threat. Some situations, such as a country's being invaded or bombarded, are almost universally viewed as threatening enough to warrant a combat response. Other situations, such as mobilization on a border or closure of a strait, may be regarded as threatening only to certain countries. This suggests that a model of nonsuperpower behavior include both general and country-specific rules for threat perception.

Opportunity Perception

Opportunistic response should, presumably, follow opportunity perception. One type of opportunity that should be modeled is the perception of relative advantage over a potential enemy. Opportunity may invite military action. In rare cases, it may compel military action. An Arab state, for example, might perceive U.S. preoccupation with fighting in Europe as an opportunity to attack Israel.

Urgency Perception

American planners have learned from experience that nonsuperpower allies do not always perceive a situation to be as urgent as it seems to the United States. This is a matter of concern because superpower effectiveness may depend on prompt nonsuperpower support. Examples include U.S. reliance on prompt access to the Azores in order to airlift forces to Southwest Asia. There is, therefore, a need to model nonsuperpower perception of urgency.

Nonsuperpower allies may find it to their advantage to respond slowly, to wait and see. This is due to the nature of alliance.

The heart of any alliance [is] a state's commitment to fight for its ally. That commitment poses two dangers; every member of an alliance has, potentially, two fears. One is that the alliance will not work, that he will be abandoned in his hour of need. The other is that the alliance will work too well, that he will be entrapped in a war he does not wish to fight.¹⁴

THE SCENARIO AGENT MODEL

The Scenario Agent model of nonsuperpower behavior was designed to meet the requirements for RSAC applications discussed above.

¹⁴Michael Mandelbaum, *The Nuclear Revolution*, Cambridge University Press, New York, 1981, p. 151.

Architecture

Several alternative designs were considered for the Mark II Scenario Agent. These included a reorganization of the Mark I rule base,¹⁵ a design based on conflict resolution research,¹⁶ a satisficing model,¹⁷ a design featuring stylized vigilant, hypervigilant, and avoidant behavior,¹⁸ and a design based on bureaucratic, ideological, and uncommitted decision styles.¹⁹

The design that was chosen separates behavior into perception and response, as shown in Fig. 2.4. Many behavioral theories include concepts of perception-response or stimulus-response, but Scenario Agent is not wedded to any one particular theory.

Scenario Agent simulates nonsuperpower behavior as though a country's decisionmaking process consisted of answering the following seven questions:

1. Does the country perceive a threat to itself in the current conflict situation?

¹⁵The Mark I version is described in James A. Dewar, William Schwabe, and Thomas L. McNaugher, *Scenario Agent: A Rule-Based Model of Political Behavior for Use in Strategic Analysis*, The Rand Corporation, N-1781-DNA, January 1982.

¹⁶This literature is reviewed in J. David Singer, "Accounting for International War: The State of the Discipline," *Journal of Peace Research*, Vol. 19, No. 1, 1981, pp. 1-18, and in Wolf-Dieter Eberwein, "The Quantitative Study of International Conflict: Quantity and Quality? An Assessment of Empirical Research," *Journal of Peace Research*, Vol. 19, No. 1, 1981, pp. 19-38.

¹⁷This is in contrast to optimizing, in which the best alternative is accepted. The concept of satisficing is developed in Herbert Simon, *The Sciences of the Artificial*, M.I.T. Press, Cambridge, 1969.

¹⁸These styles of decisionmaking are discussed in Irving L. Janis and Leon Mann, *Decision Making*, The Free Press, New York, 1977.

¹⁹See J. D. Steinbruner, *The Cybernetic Theory of Decision*, Princeton University Press, Princeton, 1974, for a discussion of these decision styles. See G. T. Allison, *Essence of Decision*, Little, Brown and Company, Boston, 1971, for a discussion of related models of national decisionmaking.

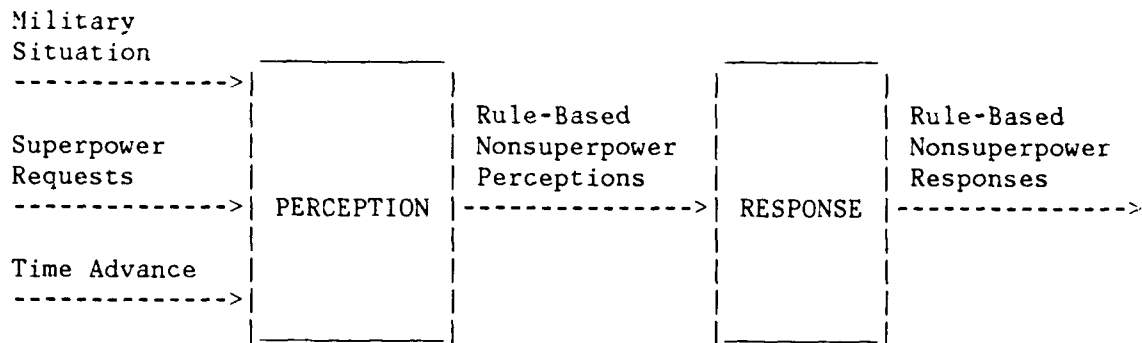


Fig. 2.4 -- Perception-response behavioral design

2. When should the country respond?
3. Does the country perceive an opportunity in the current conflict situation?
4. Which superpower, if any, should the country side with in the current conflict?
5. To what extent should the country cooperate with its superpower ally by granting access to its territory or facilities for superpower logistics or combat operations?
6. To what extent should the country involve its armed forces in the conflict?
7. What level of national preparedness is appropriate in the current situation?

The first three questions are answered by perception rules; the last four by response rules.

Scenario Agent perception rules process information from other RSAC models to determine perceptions for each nonsuperpower. The perception rules are based on historical precedent, informed opinion, and logic, rather than on any particular theory. The same military situation and superpower political move information is available to all countries, but countries vary in the perceptions they derive from these inputs. Figure 2.5 shows the structure of nonsuperpower perception. For each nonsuperpower the model applies rules to assess threat, schedule

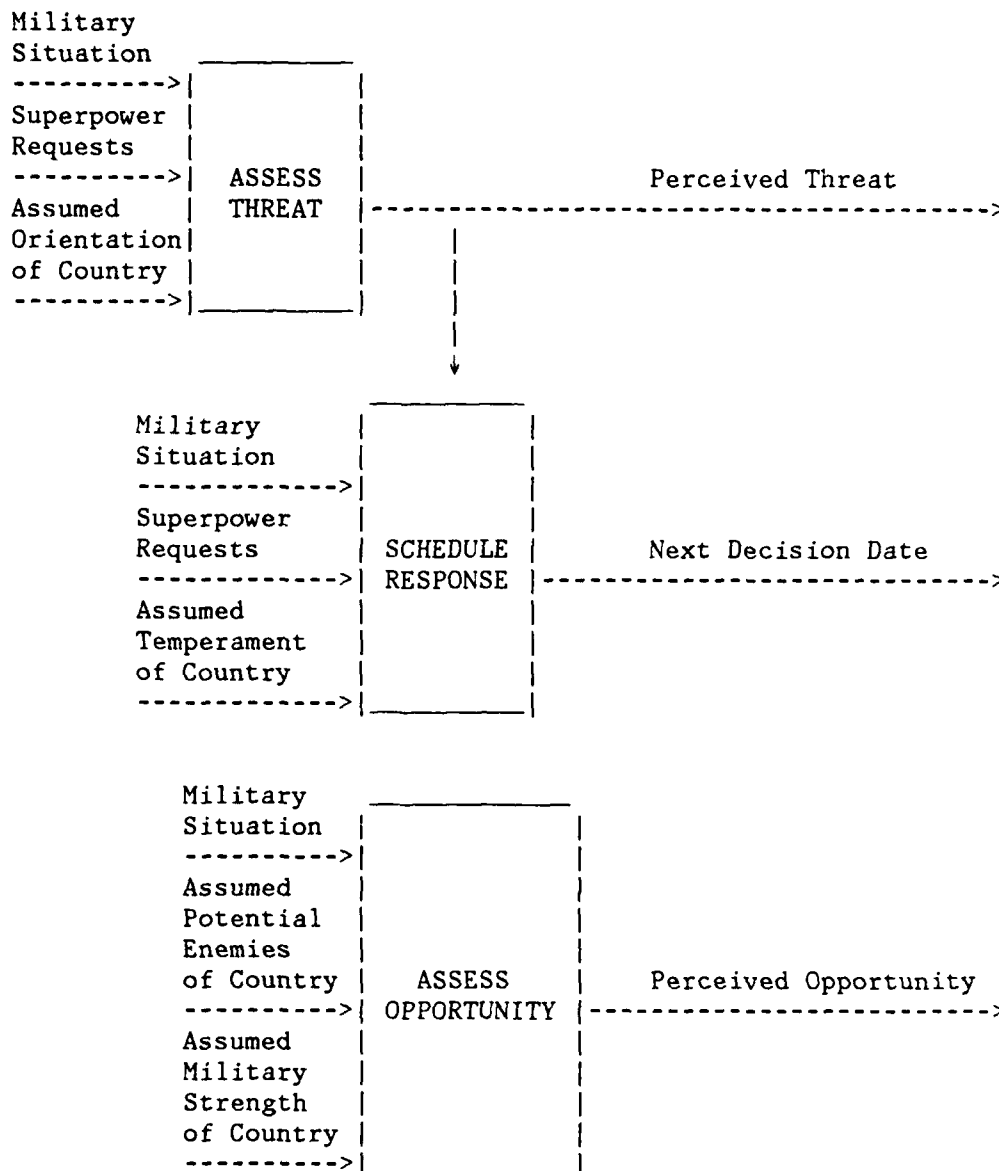


Fig. 2.5 -- Structure of nonsuperpower perception in Scenario Agent

response, and assess opportunity.

Scenario Agent expresses nonsuperpower perceptions in the terms listed and defined in Table 2.1.

Table 2.1

SCENARIO AGENT NONSUPERPOWER PERCEPTION VARIABLES

Variable Name	Value	Definition
Threat	Grave	Equivalent in near-term consequences to bombardment or invasion.
	Indirectly Grave	Equivalent in long-term consequences to bombardment or invasion.
	Serious	Equivalent in near-term consequences to a potential enemy's preparing for combat.
	Indirectly Serious	Equivalent in long-term consequences to a potential enemy's preparing for combat.
	Indeterminate	None of the above.
Opportunity	Compelling	An opportunity for the country strongly suggesting an immediate combat response.
	Inviting	An opportunity for the country strongly suggesting some immediate military response.
	Indeterminate	Neither compelling nor inviting.
Next-Decision-Date	As computed ^a	Date/time of nonsuperpower's next response.

^aNext-Decision-Date is computed in decimal days relative to an analyst-specified reference date.

Threat rules address threats that are applicable to all countries, a specific group of countries, and individual countries. The latter are limited to countries that could play an important role in Mid-East and European conflicts.

In decisionmaking the concept of opportunity for a country can take many forms. Opportunity can be more or less pure, as a goal to be achieved or a gain to be made, at the volition of the country with no consideration of other factors. It can also be a gain or benefit at a

given cost, as in negotiated agreements for basing rights in exchange for aid or defense guarantees in many forms. In the latter case, the gain is weighed against some cost that has political, monetary, or security risks to the country. Opportunity can also be considered a negative threat, in which case rather than being a counterbalance to a cost, that is, a threat, it is added to the threat as a negative factor and thereby reduces the threat. Scenario Agent models opportunity only in the situation of pure gain at the volition of a country.

Nonsuperpower responses to perceptions may take the form of either changes to national posture or messages to superpowers. Responses are generated by response rules that are influenced both by rule-based perceptions and by analyst-specified parametric assumptions. Countries try to make their responses coherent, so Scenario Agent does not separate components of response (side, cooperation, etc.) the way it does perception (threat, urgency, opportunity). Instead, each nonsuperpower's basic response is determined by the response pattern associated with the player's temperament assumed by the user-analyst. Then, if the player is assumed to be opportunistic or assertive, rule sets associated with those assumptions are applied, sometimes changing what had been decided by temperament-specified rules. This response structure is depicted in Fig. 2.6.

How a country responds to threat depends on its assumed orientation, temperament, and leader/follower relationships. Countries respond to perceived opportunity only if they are assumed to be opportunistic. Similarly, they respond assertively only if they are assumed to be assertive.

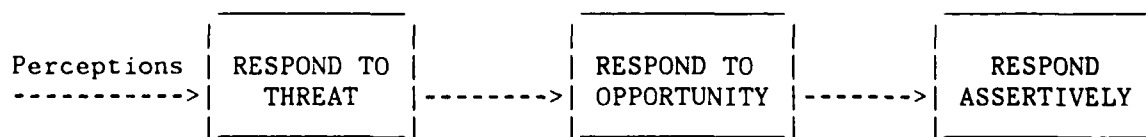


Fig. 2.6 -- Structure of nonsuperpower response in Scenario Agent

Alternative response rules are stereotypes of reliable, reluctant, and other behavior. These stereotypes, though simple, suffice for many purposes. An optimistic set of assumptions, for example, would have U.S. allies as reliable, Soviet allies as reluctant, and no countries as opportunistic. A more likely case might be for most Western-oriented countries to be initially reluctant and a few to be opportunistic and assertive. The model design allows response rule sets to be alternated, new stereotypes to be written, or rules to be overridden or changed at run time. The aim is to balance substance and flexibility.

Scenario Agent expresses nonsuperpower responses in the terms shown in Table 2.2. The terms are explained more fully in Schwabe and Jamison.

Use

Scenario Agent is used together with other RSAC models in automated war gaming for policy analysis of military strategy. A commonly used paradigm for policy analysis is shown in Fig. 2.7.²⁰

Analysis usually begins with identification of objectives. Strategy alternatives are identified and reduced by screening to a manageable set of promising alternatives. Analytic cases are designed so each case features one strategy alternative together with a particular set of technical assumptions (e.g., weapons effects) and scenario assumptions (e.g., nonsuperpower behavior). Models are used to estimate the consequences of each analytic case with respect to effects that are relevant to strategy/policy evaluation. Findings from the analysis usually come from comparing effects across cases. Sensitivity analysis seeks to determine the robustness of the findings to changes in assumptions within their range of uncertainty. Sensitivity analysis may be iterative, as suggested by the loop in Fig. 2.7.

²⁰This version of the paradigm comes from B. F. Goeller et al., *Protecting an Estuary from Floods--A Policy Analysis of the Oosterscheld: Vol. 1, Summary Report*, The Rand Corporation, R-2121,1-NETH, December 1977, pp. 8-9. The concept of screening was first developed in B. F. Goeller et al., *San Diego Clean Air Project: Summary Report*, The Rand Corporation, R-1362-SD, December 1973. Variations of the paradigm are discussed in textbooks on policy analysis. See, for example, E. S. Quade, *Analysis for Public Decisions*, Elsevier North-Holland, Inc., New York, 1975, p. 63-66.

Table 2.2

SCENARIO AGENT NONSUPERPOWER RESPONSE VARIABLES

Variable Name	Value	Definition
Side	Red, Blue, or White	Siding with USSR, U.S., or neither superpower, respectively, in the current conflict.
Resolve	Firm	Very unlikely to change its side.
	Moderate	Fairly unlikely to change its side.
	Soft	Fairly likely to change its side.
Cooperation	Noncoordinate	Not granting transit rights for the military forces of either superpower.
	Coordinate	Granting logistics access to its ally.
	Cobelligerent	Granting combat access to its ally.
	Nuclear Releasor	Fully cooperating with its ally, including agreeing on use of nuclear weapons.
Preparedness	Normal	Not mobilizing for war.
	Call-Up	Mobilizing reserve components of armed forces.
	Mobilized	Mobilizing and conscripting at wartime levels.
Mid-East/ European Involvement	Noncombatant	Not engaged in conflict in region.
	Alerted	Preparing for combat operations in region.
	Poised	Forces deployed to initiating positions for combat in region.
	Mobilizing	Mobilizing reenforcements for combat in region.
	On-Call	Has agreed to become a combatant in region if asked by its superpower ally.
	Combatant	Has forces in combat in region.
	Nuclear Combatant	Is employing nuclear weapons in region.

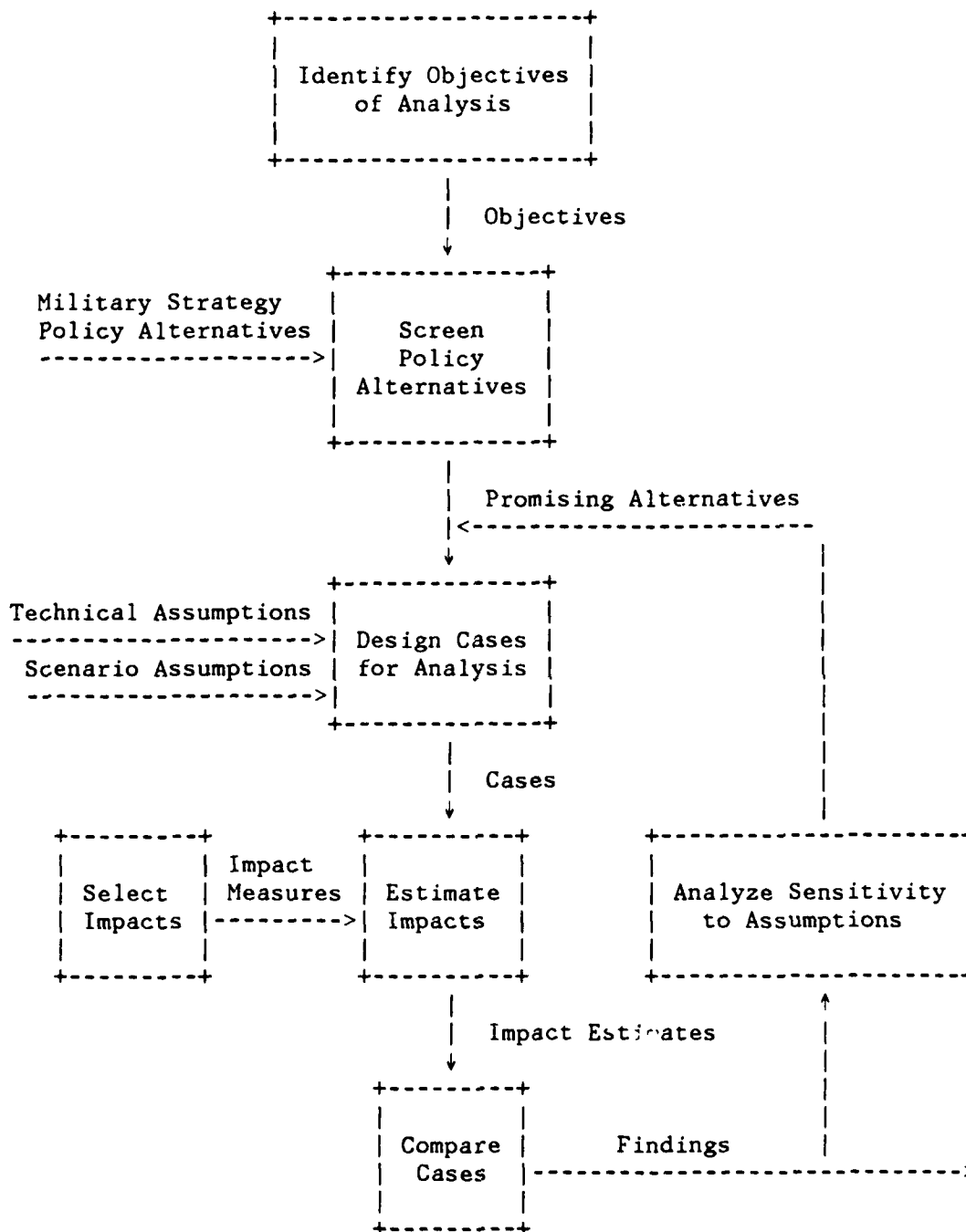


Fig. 2.7 -- A paradigm for policy analysis of military strategy

What interests us here is how scenario assumptions about nonsuperpower behavior enter into case design and impact estimation. As mentioned in the Introduction, strategic analyses usually make single estimates of nonsuperpower behavior, so that scenario assumptions do not multiply the number of analytic cases. The single estimates of nonsuperpower behavior usually enter into impact estimation through an initiating scenario, parameters in force or weapons models, or not at all.

Using Scenario Agent, an analyst enters scenario assumptions by changing nonsuperpower parameters, rules, or scripted inputs. Control of nonsuperpower behavior by parameters and rules is shown in Fig. 2.8. A country's orientation affects its threat perception because it determines the country's traditional superpower ally and opponent. Temperament affects how quickly a country responds to a given situation. Reluctant temperament, for example, implies slower response. Potential enemies and their strength relative to a superpower actor are determining factors in opportunity perception. A country's temperament determines which of the alternative threat response rule sets are applied to the country; only two of the five alternative rule sets are shown in Fig. 2.8. Leader/follower assumptions assure that a designated follower does not go out ahead of its leader. Only those countries that are flagged by parameter as opportunistic execute the rule set to respond to opportunity. Similarly, only those countries that are flagged by parameter as assertive execute the assertive response rules. Some of the assertive response rules apply only to nuclear capable countries. The effects of varying these parameters are shown in Table 2.3.

If desired behavior cannot be achieved by varying parameters alone, the Scenario Agent rules can readily be changed, even during the course of a war game. Changes to the rules are most likely to be required when analyzing a new type of strategic problem. As more types of problems are worked, the library of Scenario Agent rules will grow, and rule changes should become less frequently required.

Parameters

Behavioral Functions

Rules

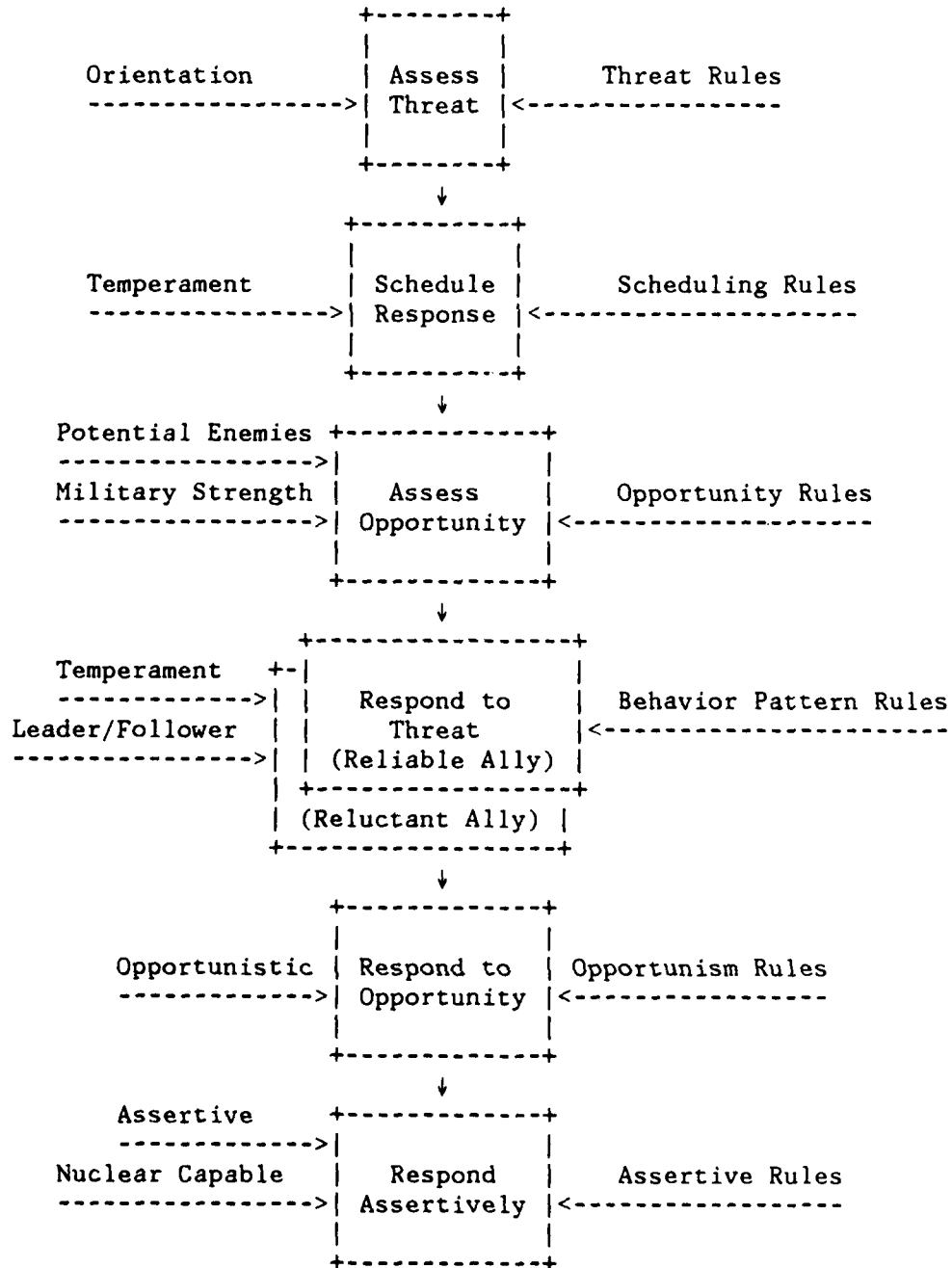


Fig. 2.8 -- Controlling Scenario Agent behavioral functions

Table 2.3

EFFECTS OF PARAMETRIC ASSUMPTIONS ON NONSUPERPOWER COUNTRY BEHAVIOR

Parameter	Nonsuperpower Country Response
Orientation	
Blue	Considers all U.S. requests for support; perceives a Red military presence in its territory as hostile.
Red	Considers all Soviet requests for support; perceives a Blue military presence in its territory as hostile.
White	Declines all superpower requests for support; perceives any superpower military presence in its territory as hostile.
Temperament	
Reliable	Tends to comply with superpower ally requests.
Reluctant	Tends to respond in proportion to its perceived threat.
Initially Reliable	Reliable temperament until asked by its superpower ally to involve its own forces; thereafter reluctant.
Initially Reluctant	Reluctant temperament until it perceives a definite threat to its interests; thereafter reliable.
Neutral	Will not support either superpower until it perceives a grave threat to its interests; thereafter reluctant.
Leader/Follower	Follower tends not to cooperate more fully with its superpower ally than its leader is doing.
Opportunistic	Tends to respond to a perceived compelling opportunity by becoming a combatant; responds to a perceived inviting opportunity by alerting its forces.
Assertive	If nuclear capable, exercises independent nuclear deterrent. If gravely threatened, requests allied nuclear strike against opponent superpower homeland. If abandoned by superpower ally, becomes noncombatant. If aided by superpower ally, becomes reliable.

Scenario assumptions can also be entered by overriding or bypassing Scenario Agent rules. To do this, the analyst enters so-called "scripted inputs" directly into the Scenario Agent data base. Scripted inputs might be called for to enter the results of off-line analysis, to follow an analyst's experimental design, or to conform with moves made by human players. Scripted inputs are communicated to other RSAC models as though they were rule-based.

In some instances an analyst may not wish to control assumptions about a particular nonsuperpower at all, but may prefer to have a team of human players game that nonsuperpower's actions. Figure 2.9 shows a form that has been used to record human player decisions in RSAC war gaming. This form was used by a team playing Israel.

Human players often like to make subtle moves and write lengthy messages. The form is designed to encourage human players to restrict their moves to roughly the level of complexity as Scenario Agent rules. This is desirable from the analyst's point of view because game play is not slowed excessively and post-game comparison of human and rule-based decisionmaking is facilitated. One blank line is left for an action not normally covered by Scenario Agent, giving players some mental maneuvering room and allowing a manageable number of new heuristic concepts to emerge from human play. Space is provided for only two short outgoing messages. The bottom of the form provides space for recording move rationale. The final item allows players to point out any game artificialities that bothered them. Human player team decisions are entered into the Scenario Agent data base as scripted inputs.

Scenario Agent can be operated in any of five modes, depending on the chosen mix of rule-based, scripted, or human-gamed nonsuperpower perception and response. These modes are shown in Table 2.4.

The simulation mode is well suited for most RSAC analyses. It features rule-based perception and response, no scripted responses, and no human gaming. The verification mode adds scripted responses, but still no human players. It can be used either to verify rules with respect to externally developed scenarios that are used as predetermined scripted actions or to verify scripts with respect to the model's rules.

ISRAELI MOVE AT _____

PLEASE CIRCLE DECISIONS MADE THIS MOVE.

Let Israel's RESOLVE be Firm/Moderate/Soft.

Let Israel's SIDE be Blue/White/Red.

Let Israel's COOPERATION be Noncoordinate/Coordinate/Cobelligerent.

Let Israel's PREPAREDNESS be Normal/Call-up/Mobilized.

Let Israel's MID-EAST-INVOLVEMENT be Mid-East-Noncombatant/Mid-East-Alerted/
Mid-East-Poised/Mid-East-On-Call/Mid-East-Combatant.

Let Israel's EUROPEAN-INVOLVEMENT be European-Noncombatant/European-Alerted/
European-Poised/European-On-Call/European-Combatant.

Other: _____

MESSAGES FROM ISRAEL

TO: _____ TEXT: _____

TO: _____ TEXT: _____

PLEASE INDICATE THE PRIMARY RATIONALE FOR THIS MOVE.

The following aspects of the situation: _____

posed a grave/serious threat to Israel.

The following aspects of the situation: _____

presented an opportunity for Israel to pursue the following national goals:

This move is intended to () improve or maintain good relations with the U.S.,
() oppose communism or Soviet hegemony, () limit or reduce dependence on
the U.S., () help keep both superpowers out of the Persian Gulf, () pre-
vent or minimize damage to Israel's territory, () buy time, () hedge bets,
() _____

The gaming environment did not allow Israel to take the following
desired actions: _____

Fig. 2.9 -- Form used to record human player decisions

Table 2.4
SCENARIO AGENT MODES OF OPERATION

	Modes				
	Simulation	Verification	Elaboration	Documen- tation	Experimen- tation
Rule-Based Perception	////////////////////	////////////////////	////////////////////	////////////////////	////////////////////
	////Yes////////	////Yes////////	////Yes////////	////Yes////////	////Yes////////
	////////////////////	////////////////////	////////////////////	////////////////////	////////////////////
Rule-Based Response	////////////////////	////////////////////	////////////////////	////////////////////	////////////////////
	////Yes////////	////Yes////////	No	No	////Yes////////
	////////////////////	////////////////////	////////////////////	////////////////////	////////////////////
Scripted Response	No	////////////////////	////////////////////	////////////////////	No
		////Yes////////	////Yes////////	////Yes////////	
		////////////////////	////////////////////	////////////////////	
Human Response	No	No	No	No	////////////////////
					////Yes////////
					////////////////////

The elaboration mode features rule-based perception and scripted response without rule-based response or human players. It can be used to flesh out predetermined, scripted scenarios by providing rationalized perceptions. The documentation mode is the minimal mode; it uses neither behavioral rules nor human players. All it does is document scripted scenarios in standard RSAC format for use by other RSAC models. The experimentation mode uses the model as an advisor to players, the aim being to develop strategies through man-machine interaction.

All but one of the game exercises described in the next chapter were run in the simulation mode; one exercise was run in the experimentation mode.

Whatever the mode of operation, Scenario Agent transfers information to other RSAC models in the form of a Scenario tableau, as shown in Table 2.5. The Scenario tableau is the output of Scenario Agent's bookkeeping function; it summarizes the current postures of all countries of interest. Table 2.5 is an abridged tableau; more countries are listed in the actual tableau. An "X" in the "Conflict" column means

Table 2.5

EXAMPLE OF SCENARIO TABLEAU OUTPUT

Country	Conflict Side	Cooperatn	Super Power Presence	Military Prep	Mid-East Invlvmnt	European Invlvmnt
Cuba	White	Noncoord	R.A.Trip_Wire	Normal	Noncombat	Noncombat
Czech	White	Noncoord	R.Major_Pres	Normal	Noncombat	Noncombat
Egypt	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
France	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
FRG	White	Noncoord	B.Major_Pres	Normal	Noncombat	Noncombat
GDR	White	Noncoord	R.Major_Pres	Normal	Noncombat	Noncombat
Hungary	White	Noncoord	R.Major_Pres	Normal	Noncombat	Noncombat
Iran	X White	Noncoord	R.Major_Pres	Call_Up	Combatant	Noncombat
Iraq	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
Israel	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
Italy	White	Noncoord	B.U.Trip_Wire	Normal	Noncombat	Noncombat
Libya	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
Morocco	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
N.Korea	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
N.Yemen	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
Netherld	White	Noncoord	B.U.Trip_Wire	Normal	Noncombat	Noncombat
Syria	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat
Turkey	White	Noncoord	B.A.Trip_Wire	Normal	Noncombat	Noncombat
UK	White	Noncoord	B.Major_Pres	Normal	Noncombat	Noncombat
US	B.Firm	Noncoord	B.Major_Pres	Normal	Noncombat	Noncombat
USSR	R.Firm	Noncoord	R.Major_Pres	Normal	Combatant	Noncombat
Yugoslav	White	Noncoord	No_Presence	Normal	Noncombat	Noncombat

the country is a location of conflict. "B.Firm" and "R.Firm" near the bottom of the "Side" column signify Blue side/firm resolve and Red side/firm resolve, respectively. For a full explanation of the abbreviations used in Scenario tableaux, see W. M. Jones, J. L. LaCasse, and M. L. LaCasse, *The Mark II Red and Blue Agent Control Systems for the Rand Strategy Assessment Center*, The Rand Corporation, N-1838-DNA, forthcoming.

Scenario Agent also produces a record of nonsuperpower decisions for immediate and deferred analysis. The record is a machine-written narrative report. Although the language is stilted, the following example explains a Kuwaiti decision: first to agree to a Blue request (because Kuwait is assumed to be a reliable Blue ally) and then to

reconsider and limit its compliance with Blue wishes (because it is assumed to be a follower of Saudi regional leadership).

KUWAIT, a militarily weak BLUE-oriented reliable ally that had previously decided to maintain peacetime preparedness, to side with neither superpower, to deny superpower access, to decline to involve own forces in Mid-East conflict, to decline to involve own forces in European conflict, perceiving no threat in the situation, noting that 'US does want KUWAIT to "side with US"', noting that 'US does want KUWAIT to "allow logistics access"', noting that 'US does want KUWAIT to "call up reserves"', noting that 'US does want KUWAIT to "alert forces for Mid-East combat"', assessed its posture. KUWAIT decided to side with the US because of Ally request. KUWAIT decided to allow logistics access because of Ally request. KUWAIT decided to alert forces for Mid-East combat because of Ally request. KUWAIT decided to decline to involve own forces in Mid-East conflict because SAUDI.ARABIA's posture is to decline to involve own forces in Mid-East conflict. KUWAIT decided to call up reserves because of Ally request.

Capability

Credibility. Scenario Agent credibility has been enhanced by (a) the techniques used in developing the model, (b) its transparency during model operation, (c) the reasonableness of its outputs in illustrative analyses, and (d) its being scrutinized during rule review and documentation review.

Model development began in 1980. The Mark I version was demonstrated to government representatives in 1981. Documentation²¹ was subjected to peer review.

Mark II development began with a series of interviews with Rand colleagues having expertise in regional security.²² These interviews were designed to surface additional significant nonsuperpower actions that should be modeled, appropriate concepts for nonsuperpower decisionmaking, and rules for transforming Scenario Agent inputs into outputs. Such interviews to collect expert knowledge are typically used for loading the data bases of expert systems or programs on computers in

²¹Dewar, Schwabe, and McNaugher.

²²The interviews were conducted by Lewis Jamison.

a process called "knowledge engineering,"²³ a branch of artificial intelligence.

The first of three review panels was convened in January 1982 to review concepts and alternative Scenario Agent designs. The panel agreed on which nonsuperpower actions needed to be modeled.

With the selection of the perception-response design, additional interviews were conducted using hypothetical conflict situations to elicit rules appropriate to the design. The rules were then structured so that all countries respond to threat.

The perception-response design was reviewed by a panel in April 1982, and a series of illustrative gaming experiments conducted in the spring of 1982.²⁴ Scenario Agent gained credibility by performing satisfactorily during these games.

Six additional gaming exercises were conducted in June 1982. These exercises were specifically designed to use Scenario Agent to explore the sensitivity of game outcomes to changes in nonsuperpower behavior. They are the basis for Chapter 3 of this Note.

A third review panel convened in August 1982 to discuss threat rules and lessons learned from gaming. The review resulted in additional threat categories, improvements to threat rules, and addition of leader/follower rules. Finally, documentation for the Mark II version of Scenario Agent²⁵ was subjected to peer review.

The model has passed some tests of its credibility, but other tests remain. Work to improve the model and its credibility continues. It is far from self-evident that we know enough about the behavior of nations in hypothetical future superpower confrontations to build a completely credible model. We will do well to remember the following:

²³Knowledge engineering is discussed in D. A. Waterman and F. Hayes-Roth, *An Overview of Pattern-Directed Inference Systems*, The Rand Corporation, P-6193, August 1978, pp. 23-26.

²⁴These experiments are described in James A. Winnefeld, *Illustrative Experiments with an Interim Version of Rand's Strategy Assessment Center*, The Rand Corporation, N-1917-DNA, November 1982 (For Official Use Only).

²⁵Schwabe and Jamison.

A model is always possible, but it is not always useful in a given state of knowledge.

What limits its usefulness is not usually an inadequacy in our knowledge of mathematics or logic (though it is sometimes that) but rather an inadequacy in our knowledge of the subject-matter. The requirements of a model then impose a premature closure on our ideas. It is not that building the model deludes us into thinking we know something of which in fact we are ignorant--on the contrary, we may be using the model precisely in order to find out how much or how little of what we suspect is indeed true. The danger is that the model limits our awareness of unexplored possibilities of conceptualization. We tinker with the model when we might be better occupied with the subject-matter itself. In many areas of human behavior, our knowledge is on the level of folk wisdom . . . incorporating it in a model does not automatically give such knowledge scientific status. The maturity of our ideas is usually a matter of slow growth, which cannot be forced. The progress of inquiry often shapes our thinking in ways that were quite unanticipated at earlier stages. Closure is premature if it lays down the lines for our thinking to follow when we do not know enough to say even whether one direction or another is the more promising. Building a model, in short, may crystalize our thoughts at a stage when they are much better left in solution, to allow new compounds to precipitate.²⁶

If this does not apply to the Scenario Agent model, it is because strategic policy and analysis are going to proceed whether or not the state of knowledge of nonsuperpower behavior is adequate to support fully credible modeling. As J. W. Forrester put it,

Much of the behavior of systems rests on relationships and interactions that are believed, and probably correctly so, to be important but that for a long time will evade quantitative measure. Unless we take our best estimates of these relationships and include them in a system model, we are in effect saying that they make no difference and can be omitted. It is far more serious to omit a relationship that is believed to be important than to include it at a low level accuracy that fits the plausible range of uncertainty.

If one believes a relationship to be important, he acts accordingly and makes the best use he can of the information available.²⁷

²⁶Abraham Kaplan, *The Conduct of Inquiry*, Chandler Publishing Company, San Francisco, 1964, p. 279.

²⁷J. W. Forrester, *Urban Dynamics*, The M.I.T. Press, Cambridge,

Theory-building academic work will continue with or without this model. The belief motivating Scenario Agent development is that making a range of "folk wisdom" on nonsuperpower behavior available for strategic analysis is better than treating nonsuperpower behavior simply by single estimate assumption.

We are concerned with credibility not only of the model but of the war gaming process as well. Another warning is in order:

Great care must be exercised, especially in complex or all-machine games, to keep the players or sponsors from succumbing to the illusion that a real test of presumptions or ideas has occurred. The investment in computer programming, professional time, and emotional energy required to design and operate a war game may be sufficiently great to create a false sense of the validity of its results. In fact, a single game cannot establish any result with great confidence; at best, it may produce limited statements about processes, procedures, and possible outcomes.²⁸

This is a real concern.²⁹ A partial remedy is to repeat games under different sets of assumptions. The idea, though seldom followed, is not new:

The war game is, even at its most elaborate, an austere abstraction from the real thing. It is a way of eliminating one kind of bias, that is, it is a means of giving the enemy his full due, and also a way of constraining weak human beings to think through systematically a number of consecutive acts or stages in a conflict. By repeating a game several times under different assumptions, one may also develop new insights into the factors which might prove critical.³⁰

The point about bias in not giving the enemy his full due also pertains

1969, as quoted in B. F. Goeller et al., *Protecting An Estuary from Floods*, p. 28.

²⁸G. D. Brewer and M. Shubik, *The War Game*, Harvard University Press, Cambridge, 1979, p. 59.

²⁹See Davis and Winnefeld for a discussion of inappropriate uses of the RSAC.

³⁰B. Brodie, *Strategy in the Missile Age*, Princeton University Press, Princeton, 1965, p. 386.

to nonsuperpowers.

Flexibility. Considerable flexibility is offered to the user through the parametric assumptions entered at the outset of a gaming exercise. Scenario Agent does lack some desirable flexibility in its current rule base. Nonsuperpowers control their own forces at a policy level, but not at a tactical level. Trade, resources, and other economic factors are not treated explicitly. The model's design could accommodate rule augmentation to add flexibility in these areas, but some such changes would necessitate changes to other RSAC models, as well. The ability to use human players to augment or replace the rule-based model contributes greatly to flexibility.

CHAPTER 3

EXAMPLES OF NONSUPERPOWER IMPORTANCE

A BASELINE SCENARIO

Overview

Three major threats loom on the U.S. strategic landscape: a nuclear attack by the Soviet Union, a conventional attack on NATO allies by the Soviet Union, and an attack by the Soviets or others on Southwest Asian oil supplies. These three threats have been integrated for force programming purposes into a standard scenario which begins with a Soviet invasion of Iran, spreads to Europe, and culminates in a strategic nuclear exchange. There are numerous articles in the literature providing the needed background.¹

One of the main analytic reasons for using scenarios is to constrain a combinatorial explosion of variables. Without a scenario, the number of combinations of variable values increases geometrically ("explodes") as the number of variables or their permissible values increases. For example, two variables, each with three permissible values, can be combined six ways. Scenarios combine variables into a sensible story. Since many otherwise possible combinations of variables do not make sense in scenario form, scenarios serve to constrain or reduce the number of combinations considered. Analysts often reduce the variables to the extreme of but one scenario.

The importance of standard scenarios lies not so much in their being more credible than other scenarios, but in their influence on program budgeting and planning. Forces and strategies are, in part,

¹The standard scenario is reflected in A. Wohlstetter, "Meeting the Threat in the Persian Gulf," *Survey*, Vol. 25, No. 2, Spring 1980, pp. 128-188. It also appeared in a somewhat abridged form as "Half-Wars and Half-Policies in the Persian Gulf," in W. Scott Thompson (ed.), *National Security in the 1980s: From Weakness to Strength*, Institute for Contemporary Studies, San Francisco, 1980, pp. 123-171. See also D. Ross, "Considering Soviet Threats to the Persian Gulf," *International Security*, Vol. 6, No. 2, Fall 1981, pp. 159-180, and J. Epstein, "Soviet Vulnerabilities in Iran and the RDF Deterrent," *International Security*, Vol. 6, No. 2, Fall 1981, pp. 126-158.

designed to the standard scenario. There is, in fact, a danger that U.S. capabilities may be designed too inflexibly to the standard scenario.

RSAC research has focused on the standard Southwest Asia scenario because of its strategic interest, noted above, and because members of the strategic analysis and planning community are familiar with it. An important test of RSAC capabilities has been to duplicate, vary, and analyze the standard Southwest Asia scenario.

Ideally, an assessment of the strategic importance of nonsuperpower behavior in conflicts involving both superpowers would consider a very broad range of scenarios. Even if the scenarios considered were restricted to those beginning in Southwest Asia, many scenarios of interest remain. As former Secretary of Defense Harold Brown has noted, these would include internal conflicts, wars within the region, creeping Soviet hegemony, and a massive Soviet attack.² The current state of RSAC development, together with resource limitations for research on the effects of nonsuperpowers, restrict the range of scenarios to variations about a standard scenario involving a massive Soviet attack through Iran. The baseline form of this scenario has been and continues to be an important focus for defense planning. Variations in the estimated effectiveness of U.S. forces due to plausible variations to the standard scenario should, therefore, be of particular interest.

One of the objectives of RSAC development in 1982 was to explore versions of a standard force-sizing scenario set in the 1990 time frame. The baseline scenario and some of its variants proceed through six phases that have parallels in many scenarios.

Phase 1: Early Blue Efforts To Gain Support. By "early" we mean between the time Red mobilization is first observed on the Iranian border and the time Red selects its specific force employment plan. During this interval Blue needs to gain logistics access for rapid deployment force (RDF) deployment and to receive commitment from at least one of its allies to involve components of its armed forces if necessary. Allies may believe or be undecided about whatever cover

²H. Brown, "U.S. Security Policy in Southwest Asia," published transcript of speech given at the School of Advanced International Studies, The Johns Hopkins University, Baltimore, 1981.

story Red is using to mask its intentions. They may be unable to respond to an ambiguous threat because of domestic political concerns. They may indulge in wishful thinking. They may suspect Blue's motives. They may doubt Blue's commitment.

Phase 2: Final Preparations To Deter Or Counter. During this phase evidence of Red's intentions is more persuasive. Blue is focusing its efforts to line up support on key allies that are on the verge of a favorable decision. Blue is now concerned not only about logistics access but about combat mission launch access as well. Allies have observed enough of Blue's responses to judge its commitment. Allies have to consider whether their actions could significantly contribute to deterring Red from invading Iran and whether they are endangering themselves by supporting Blue. It may still be impossible politically for some allies to commit themselves before Red has actually moved across Iran's border.

Phase 3: Response to Southwest Asia Invasion. The fact of the Red invasion changes perceptions of threat and responsibility. Countries already supporting Blue may themselves be attacked, prompting them to become combatants if they were not already so. Blue's main attention shifts from warning Red and lining up ally support to direct military actions against Red.

Phase 4: Preparations in Europe. During this phase European allies position themselves for the eventuality of East-West war in Europe. There is fear among allies of being entrapped in a war they do not want. Allies in the Southwest Asian theater may fear abandonment as the focus shifts to Europe.

Phase 5: War in Europe. As war in Europe begins, countries that mobilized or have been attacked are automatically drawn into combat. Others must declare themselves neutral or commit to a side. There is fear of vertical and horizontal escalation. There is fear of impotence.

Phase 6: World War. War spreads to major attacks against superpower homelands. Additional nonsuperpowers become targets. Those that are not already targets try to sit it out. After central nuclear exchange countries have to decide if they can, must, or want to continue fighting. They must assess whether they have been abandoned by their superpower ally. They must assess the extent to which superpowers matter to them anymore.

Initiating Conditions

The initial game time was set at 22 August 1990, at which time a Soviet client regime controls the government of Iran. Much of Iran is in a state of near civil war. Iranian army units have defected to an organization known in the game runs as "the Iranian white faction." Some Soviet advisors are in Iran but no Soviet forces. There are no U.S. military units in the immediate region. Other nations in the region are uncommitted to either the United States or the Soviet Union. However, Egypt and some of the Gulf Cooperative Council (GCC) powers have tentative agreements with the United States to provide basing and overflight rights under certain conditions of threat to the region. NATO nations realize their dependence on the resources of the region but are politically unable to commit any forces or support for its defense.

Assumptions about nonsuperpower countries are shown in Table 3.1. Iran-Red is an hypothetical Soviet client regime in control of the government of Iran, and Iran-White is an hypothetical Western-oriented army faction. Neither is realistic in 1983. None of the countries were assumed to be opportunistic, assertive, or to be a regional leader or follower of another nonsuperpower.

Table 3.1 summarizes some plausible examples of possible assumptions. These assumptions are *not* actual intelligence estimates.

A Baseline Scenario Generated by Automated Wargaming

Figure 3.1 is an overview of a baseline scenario produced by RSAC models. The baseline scenario is tracked in greater detail in the Appendix, which gives a brief description of the situation, national response to that situation, and the rationale behind the response at each major decision point.

Table 3.1

ASSUMPTIONS ABOUT NONSUPERPOWER BEHAVIOR

Country Name	Nuc. Cap.	Military Strength	Dependency	Superpower Presence	Orient.	Temperament
Afghanistan	No	Average		Red Major	Red	Reliable
Bahrain	No	Weak	Hormuz	None	Blue	Init-Reluctant
Belgium	No	Weak	Hormuz	None	Blue	Init-Reluctant
Bulgaria	No	Average		None	Red	Reliable
Canada	No	Average		None	Blue	Init-Reluctant
Czech.	No	Average		Red Major	Red	Reliable
Denmark	No	Weak	Hormuz	None	Blue	Init-Reluctant
Egypt	No	Strong	Suez	None	Blue	Reliable
France	Yes	Strong	Hormuz/Suez	None	Blue	Init-Reluctant
FRG	No	Average	Hormuz	Blue Major	Blue	Init-Reluctant
GDR	No	Strong		Red Major	Red	Reliable
Greece	No	Average		Blue Tripwire	Blue	Init-Reluctant
Hungary	No	Average		Red Major	Red	Reliable
Iceland	No	Weak		Blue Tripwire	Blue	Init-Reluctant
Iran-Red	No	Average	Hormuz	None	Red	Reliable
Iran-White	No	Average	Hormuz	None	Blue	Reliable
Iraq	No	Average	Hormuz	None	White	Neutral
Italy	No	Average	Hormuz	Blue Tripwire	Blue	Init-Reluctant
Kuwait	No	Weak	Hormuz	None	Blue	Init-Reluctant
Luxembourg	No	Weak	Hormuz	None	Blue	Init-Reluctant
Netherlands	No	Weak	Hormuz	Blue Tripwire	Blue	Init-Reluctant
Norway	No	Weak		None	Blue	Init-Reluctant
Oman	No	Weak		None	Blue	Init-Reluctant
Poland	No	Average		Red Major	Red	Reliable
Portugal	No	Weak		Blue Tripwire	Blue	Reliable
Qatar	No	Weak	Hormuz	None	Blue	Init-Reluctant
Romania	No	Average		None	Red	Reliable
Saudi Arabia	No	Average	Hormuz/Suez	None	Blue	Init-Reluctant
Spain	No	Average		Blue Tripwire	Blue	Reliable
Turkey	No	Strong		Blue Token	Blue	Init-Reluctant
UAE	No	Average	Hormuz	None	Blue	Init-Reluctant
UK	Yes	Average		Blue Major	Blue	Init-Reluctant

Scenario Events

Intercontinental
nuclear exchange

Blue attacks
theater forces
in Red homeland

Theater nuclear
war in Europe

Red invades
Western Europe

NATO mobilizes

Warsaw Pact
mobilizes

Red/Blue direct
conventional combat

Red invades S. Iran

Red invades N. Iran

Blue deploys RDF
to SWA

Blue prepares to
counter Red

Red prepares to
invade Iran

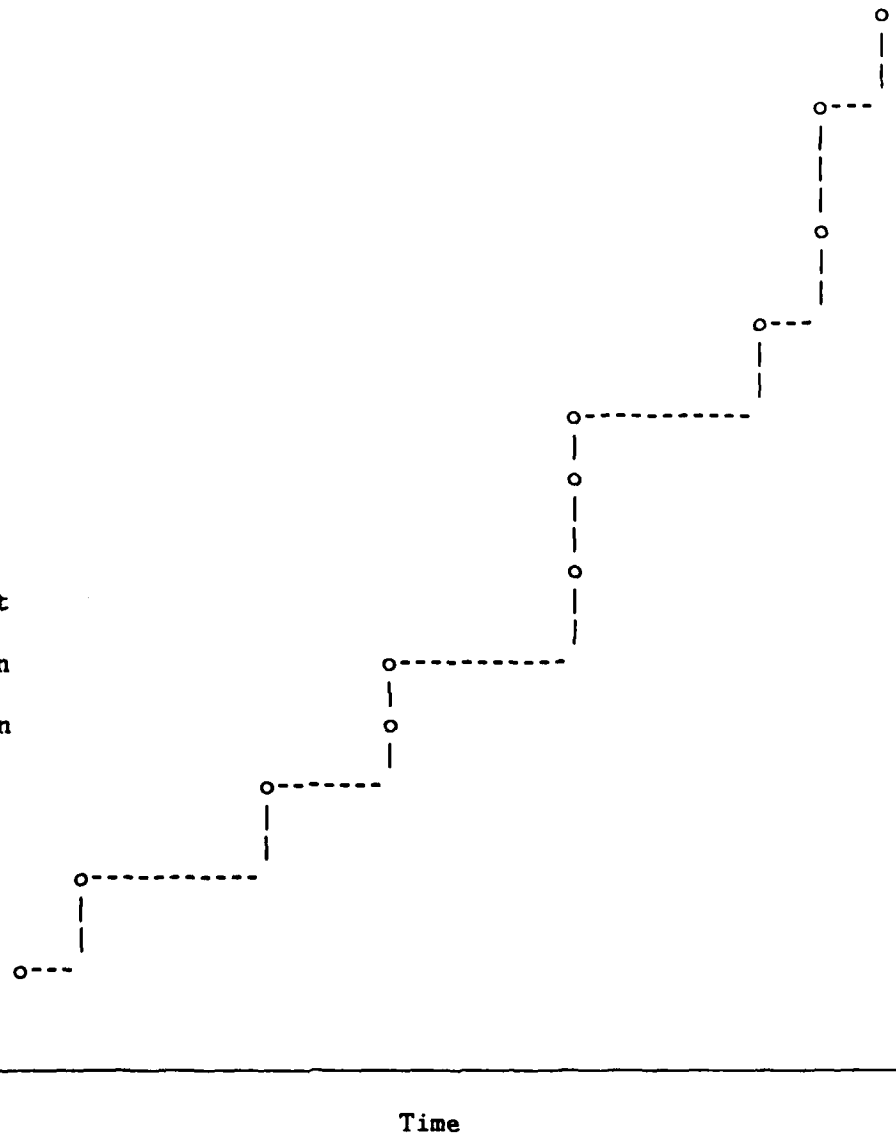


Fig. 3.1 -- Escalatory events in baseline scenario

NONSUPERPOWER IMPORTANCE IN SCENARIO VARIATIONS

Several variations on the baseline scenario were generated using the RSAC automated war gaming system. Each set of assumptions producing a scenario is called a case.

Scenario Variations

Case B (Baseline) is the scenario already described. It is described more fully in this section, including selected nonsuperpower behavior.

Case C (Oil Consumers) is a variation of Case B in which several European countries that are dependent on Persian Gulf oil perceive a serious threat shortly after Red mobilizes on the Iranian border. This scenario variation could be generated simply by adding the rule:

If the actor = one of Belgium, Denmark, France,
Luxembourg or Netherlands
and USSR is mobilized on (the border) of Iran,
let the actor's threat be indirectly-serious.

Here "the actor" is the country currently being processed by the computer program. The parentheses around "the border" are needed by the computer to avoid ambiguity. When Case C was run, "indirectly-grave" and "indirectly-serious" categories of threats had not yet been defined, so the rule as originally written would yield a perception of "serious" threat. The expectation in running Case C was that early perceptions of threat by European oil consuming Blue allies might strengthen Blue's early response. It did not, because Blue deployment (as modeled in the particular data bases used) was not highly dependent on these countries. Case C quickly converged to the baseline.

Case E (Egypt) assumed that Egypt was willing to provide forces to augment Blue's RDF. The variation was generated by a scripted input message from Egypt to Blue offering force involvement. The expectation in Case E was that Red might be deterred in Iran if it faced a larger Blue force. That is what happened in the game run.

Case L (Libya) posited Libyan interference with Blue forces in the Mediterranean. The variation was effected by adding a rule that caused Libya to perceive a threat from Blue forces deploying to neighboring

Egypt. The expectation in Case L was that Blue's RDF response would be degraded. In the game run Libya invited a Red military presence into its territory, but Red felt constrained not to attack Blue forces before Red's D-day for its invasion of Iran. Accordingly, there was no appreciable degradation of Blue response. Case L converged to the baseline.

Case O (Oil Consumers and Suppliers) was similar to Case C (Oil Consumers) except that Persian Gulf oil suppliers also felt threatened by Red mobilization on the Iranian border. In Case O expectations were met. Blue was able to deploy faster because of more prompt Saudi cooperation, and Red limited its objectives to northern Iran.

Case P (Pipeline) posited susceptibility of European countries serviced by the Soviet Siberian gas pipeline to Red blackmail. This scenario variation was effected by assuming neutral temperament for Belgium, France, FRG, Italy, and the Netherlands. The expectation in Case P was that lack of alliance cohesion would undermine Blue efforts to defend Europe. This is what happened in the game run.

Case S (Saudi-Israeli) was designed to explore possible effects of Arab or Israeli independent interests. Because of a special interest in Saudi or Israeli initiatives, this scenario variation was generated using human teams playing each of these countries. Other nonsuperpowers were played by Scenario Agent. The expectation in Case S was that Saudi Arabia and Israel might refuse to cooperate on the same side. In the game run Saudi Arabia did refuse to cooperate, but not because of Israel. Rather, it was offended by the behavior of GCC³ states in cooperating with Blue (per Scenario Agent rules) before Saudi Arabia committed itself. This run motivated development of Scenario Agent leader-follower rules.

Case T (Turkey) assumed early Turkish threat perception from Red mobilization nearby on the Iranian border. The variation was effected by having Turkey perceive the Red mobilization on Iran's border concomitantly as Red mobilization on Turkey's border.

³ The Gulf Cooperation Council consists of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE.

None of the assumptions made in these variant scenarios is claimed to be "correct." Rather, they represent a range of differing assumptions that at least some strategic analysts would find plausible. In each case there is an expectation that its key assumption might lead to interesting results.

The following discussion of scenario variations is organized by the six phases previously discussed. Each phase consists of a sequence of moves. The description of each move begins with a diagram showing the country acting and a summary of the situation, response, and rationale occurring in the baseline scenario at that move. This stylized baseline flow summary includes nonsuperpower moves that were deleted from the baseline scenario flow given in the Appendix. In addition to the baseline flow summary, the discussion of a particular move may include commentary on rules that are applicable to the move in the baseline scenario, divergences from the baseline by case, and nonsuperpower effect on superpower decisionmaking.

Several Blue and Red Agent rules are quoted at length to show precisely how nonsuperpower behavior might affect superpower decisionmaking. Several Scenario Agent rules are also quoted, to show how nonsuperpower behavior can be controlled by specifying temperament and how the exercises led to rule refinement. The rules are indented and single spaced, so they can be skipped by readers who find them tedious.

Readers who want to scan the material detailed in the next 30 pages may find it sufficient to read the situation summaries to the right of the flow diagrams and the tabular summaries of nonsuperpower impact on superpower decisionmaking.

Phase 1: Early Blue Efforts To Gain Support

Move 1.1: Red Regional Strategy Decision

+-----+
| RED |
+-----+

SITUATION: Red receives a request for military assistance from its client government in Iran and must select an intervention plan that fits the circumstances and Red objectives.

RESPONSE: Red sets the present day as D-day for an invasion of Iran, begins mobilizing, and deploys additional naval forces to the Indian Ocean.

RATIONALE: Red is inclined to provide assistance unless military balance considerations suggest an unsatisfactory outcome or high risk of undesired escalation. Red's intelligence estimate is that combat outcome prospects in the event of escalation in Europe are satisfactory. Intelligence estimates for SW Asia suggest Iran could be occupied successfully because of the slowness of Blue's anticipated response.

Applicable Rules. The Red Agent rule calls for intelligence estimates for several future contingencies. RSAC Force Operations and Scenario Agent models provide the estimates. A substantial portion of the rule is quoted here⁴ to give a concrete example of Red Agent logic. Within the rule, conditions met in Case B (baseline), together with their associated action instructions, are italicized.

Conduct a Force Operations look-ahead in Europe, assuming the execution of Red plan/script D2⁵ following mobilization and deployment of the WP forces starting today, with NATO assumed to initiate mobilization and deployment of reinforcements after a few days delay and further assuming that conventional weapons only will be used by both sides.

⁴ Algebraic variables (e.g., T1, T2, X, Y) are substituted for planning factors (i.e., times, forces, distances) embodied in the Red and Blue Agent rules.

⁵ Red realizes that a war in Southwest Asia may spread to Europe. D2 is a Red plan for an invasion of Europe. The look-ahead is part of Red's worst-case planning. The details of Red plan/script D2 had previously been made known to Force Operations.

IF Red is projected as occupying and controlling Western European territory as far as France in less than T1 days of combat operations (penetration along 2 or more major axes of Red attack)

THEN Initiate the process of selecting which of Red Southwest Asia plans/scripts (A, B, or C) is to be executed starting today (decision procedure given below)

ELSE IF *European look-ahead projects Red control objectives as being achieved in more than T1 days but less than T2 days⁶*

THEN *Initiate the process of selecting which of Red Southwest Asia plans/scripts (with allowable choices limited to plan/script A, plan/script B, or abort) is to be executed starting today (decision procedure given below)*

ELSE IF European look-ahead projects Red control objectives as NOT being attainable in T2 days or less and no successful Blue defense within Y miles of the FRG eastern border on X or more major Red attack axes

THEN Initiate the process of deciding whether to execute Red plan/script A starting today or to take no action in Southwest Asia (Decision procedure given below)

ELSE IF European look-ahead projects a successful Blue defense within Y miles of the FRG border on X or more major Red attack axes

THEN Take no Red military action in Southwest Asia

⁶ These are the conditions foreseen by the European look-ahead; they were probably strongly influenced by assumed superpower force structures.

In this particular run the European look-ahead foresaw Red victory in a European contingency in T1 to T2 days; this allowed plans B and A (but not plan C) to be considered for Southwest Asia. (Plan B was a takeover of all Iran; plan A was an occupation of northern Iran only; plan A was a larger scale invasion of the Persian Gulf littoral.)

The Red Agent rule continues. The following part led to selection of plan B:

ELSE IF The SWA (Southwest Asia) look-ahead projects Blue will have forces in Iran on D+T3 (but less than A1 ADEs and more than A2 ADEs)⁷

AND Red controls Northern Iran by D+T4

AND Turkey remains a noncombatant (denying Blue's use of its bases for SWA combat operations)

THEN Set today's date as D-T5

AND Begin mobilizing/deploying for plan B

AND Reenforce Red naval forces in the Indian Ocean

AND Announce (on D-27) an upcoming large scale military exercise in the Transcaucasus/Turkman area

AND IF You have a request from the Red Iranian faction for Soviet combat aid

THEN Send message to Red faction, "I agree to send Soviet forces to your assistance."

ELSE Send to Red faction "I intend to send Soviet forces to assist you."

Nonsuperpower Impact. There are three ways nonsuperpower behavior could enter Red's decisionmaking here. First, anticipated nonsuperpower Blue force augmentation could change the number of ADEs expected in Iran by D+11. If Red expected such behavior, it would have a strong impact on Red decisionmaking--plan B would be rejected. Second, if Red

⁷ ADE is an abbreviation for armored division equivalent. D+T3 is T3 days after D-day (date invasion of Iran is to begin).

expected Turkey to become a combatant (or a cobelligerent), Red would reject plan B--another strong impact on Red decisionmaking. Third, if Red received a message from the Red Iranian faction seeking assistance, Red would agree. If no such message were received, Red would proceed with plan B anyway. Thus the Red faction's invitation would have a weak impact on Red decisionmaking. These impacts can be summarized as follows:

Action	Country	Impact on Red Regional Strategy
Involvement	Blue ally	Major
Cooperation	Turkey	Major
Invitation	Red faction	Minor

Move 1.2: Early Blue Response

+-----+ BLUE +-----+	<p>SITUATION: Blue has received a request for military assistance from an Iranian Army faction. Blue observes early indications of Red mobilization.</p> <p>RESPONSE: Blue begins preparations to counter Red militarily if necessary. Blue begins negotiations with European and Mid-East allies for permission to transit and use bases for deployment of Rapid Deployment Force. Blue requests participation by forces of UK, FRG, and France if Blue forces engage in combat.</p> <p>RATIONALE: Blue believes it cannot allow Red to upset the regional security of the Persian Gulf. Blue is not prepared to project power into SW Asia until base access is obtained.</p>
--------------------------------	---

Applicable Rules. Blue selects its response on the basis of Blue's estimate of Red capability. Nonsuperpower behavior has no effect on Blue's decisionmaking at this point, other than to determine recipients of Blue messages seeking support. The applicable Blue rule reads:

*Send to any of the following that is not a Blue coordinate:
UK, FRG, Italy, Israel, Greece, Portugal, Spain, Turkey, Egypt,
Saudi Arabia, Oman, Bahrain, Kuwait, UAE, and Qatar "Request
change you Blue coordinate" (a request for transit base rights)*

Send to UK, FRG, France, Turkey, and any Arab nation that is currently host to US forces: "Request change you Blue Mid-East-on-call" (a request that they agree to contribute forces to the defense of SWA if USSR attacks)

Case S. Blue does not include Israel in the request for logistics access in the baseline scenario, but does in Case S (Saudi-Israeli).⁸ Israel perceives a serious threat in potential negative change in local regimes and in the superpower balance. Israel sees some opportunity here to infuse new content in Blue-Israeli security relationships. Israel's intent is to maintain good relations with Blue, to oppose Communism and Soviet hegemony, to prevent damage to Israel's territory, to buy time, and to hedge bets. Israel grants Blue logistics access and calls up components of its reserves. Israel asks Blue about its intentions, the role of Israeli neighbors, Blue offsets and guarantees, and Red plans.

Move 1.3: Early Egyptian Response

<div style="border: 1px solid black; padding: 5px; text-align: center;"> EGYPT </div>	<p>SITUATION: Egypt has received a request from Blue for logistics access and is aware of Red naval reinforcement of Indian Ocean naval forces.</p>
	<p>RESPONSE: Egypt grants logistics access to Blue and requests a Blue tripwire military presence.</p>
	<p>RATIONALE: Egypt perceives a serious threat in the major Red presence in the Indian Ocean. A reliable Blue ally, Egypt agrees to Blue's request and responds to the Red naval threat by requesting a Blue tripwire presence.</p>

* Israel and Saudi Arabia were played by human teams in Case S. Israel was not played at all in the other runs, i.e., the instruction "deny Israel is a player" was entered at the outset. In Case S Saudi rule-based responses were overridden parametrically in accordance with the Saudi team decisions.

The above form of the description of Egypt's move was not produced directly by Scenario Agent. The model caused the following to appear on the operator's console:

EGYPT, a militarily strong Blue-oriented reliable ally
that had previously decided to maintain peacetime preparedness,
to side with neither superpower,
to deny superpower access,
to decline to involve own forces in Mid-East conflict,
to decline to involve own forces in European conflict,
noting that 'US does want EGYPT as BLUE',
noting that 'US does want EGYPT as COORDINATE',
perceiving a serious threat in major Red naval presence in Indian Ocean,
assessed its posture.
EGYPT decided to side with the US because of Ally request.
EGYPT decided to allow logistics access because of Ally request.

The first line of that output tells what has been assumed parametrically about Egypt--that it is militarily strong, Blue-oriented, and is of reliable temperament--as we saw earlier in Table 4.1. The information about Egypt's previous decisions summarizes Egypt's posture going into the move. In Scenario Agent terms, its preparedness was normal, side was white, cooperation was noncoordinate, Mid-East-involvement was Mid-East-noncombatant, and European-involvement was European-noncombatant. The two lines beginning with "noting" contain ROSIE expressions for the text of Blue's message to Egypt. Egypt's decisions were to change its side from white to blue and its cooperation from noncoordinate to coordinate, as requested by Blue.

Applicable Rules. Egypt's perception of a serious threat from Red naval buildup in the Indian Ocean was noted and questioned during subsequent review. A reviewer argued that that was insufficient cause for a perception of serious threat. The particular threat perception rule was deleted.

Because Egypt was assumed to be reliable, the following response rules pertained:

- [2] If there is a side (s) such that
(s) is a preference of (the actor's Ally) for the actor,
let the actor's side be (s) and record

(the actor's side) as "Ally request".

[3] If there is a cooperation (c) such that
(c) is a preference of (the actor's Ally) for the actor,
unless (c) = nuclear-releasor
and the actor's threat = indeterminate,
let the actor's cooperation be (c) and record
(the actor's cooperation) as "Ally request".⁹

Notice that given the message from Blue and given Egypt's assumed reliable temperament, it did not matter whether Egypt perceived a determinate threat.¹⁰ If, however, Egypt's assumed temperament were reluctant, initially-reluctant, or neutral, it would not have agreed to Blue's request unless it perceived at least an indirectly-serious threat.

Reviewers also argued that a reliable ally would require more than a serious threat to prompt its requesting a tripwire military presence. The applicable reliable temperament response rule was changed to read:

[11] If there is a superpower-presence (x) such that
(x) is a preference of (the actor's Ally) for the actor,
let the actor's superpower-presence be (x) and record
(the actor's superpower-presence) as "of Ally request",
otherwise if the actor's threat = [is] grave
and the actor's strength = [is] militarily-weak,
if the actor's Ally = [is] US
and the actor's superpower-presence ~= [isn't] Blue-major
(send {return, "FROM ", the actor,
" TO BLUE: REQUEST CHANGE ME BLUE MAJOR-PRESENCE", return}))
otherwise if the actor's Ally = [is] USSR
and the actor's superpower-presence ~= [isn't] Red-major
(send {return, "FROM ", the actor,
" TO RED: REQUEST CHANGE ME RED MAJOR-PRESENCE", return})).

⁹ These and other Scenario Agent rules are fully listed in Schwabe and Jamison, Appendix A.

¹⁰ A determinate threat, as used here, is a perception of direct or indirect danger to important national interests, sufficient to prompt some kind of military response even by reluctant allies, though not necessarily by avowed neutral countries. A threat not determined to be grave, indirectly grave, serious, or indirectly serious is considered to be indeterminate by default.

Under the revised rule, Egypt would not request a Blue military presence. This would have no major effect here because Blue is not concerned with deterring an attack on Egypt (the function of a tripwire presence), but needs access to logistics bases.

Case E. In Case E (Egypt) Egypt perceives a serious threat in the Red mobilization on the Iranian border. Egypt responds by granting Blue logistics access and by offering to place its armed forces on call for Persian Gulf operations.¹¹ Blue accepts the offer and, in addition to its baseline scenario actions to alert the RDF, dispatches aircraft to transport Egyptian forces into the Southwest Asian theater.¹²

Move 1.4: Early Omani Response

+-----+	SITUATION: Oman has received a request from Blue for
OMAN	logistics access and is aware of Red naval reenforcement
+-----+	of Indian Ocean naval forces.
+-----+	RESPONSE: Oman grants logistics access to Blue.
	RATIONALE: Oman perceives a serious threat in the major
	Red presence in the Indian Ocean and grants Blue logistics
	access to counter the threat.

Applicable Rules. Unlike Egypt, Oman's temperament was assumed to be reluctant. Therefore, it matters whether Oman would perceive a serious threat in the major Red presence in the Indian Ocean. This perception rule was challenged in the case of Oman, as it was in the case of Egypt. (We shall soon see the same controversial rule being applied to other countries.) If the rule were deleted, Oman would not comply with Blue's request, unless Oman (like Egypt) were assumed to be a reliable ally. Indeed, it can be argued that Oman's temperament should be assumed to be reliable. That debate is not settled here. What is important for our purposes is to note (1) that the questionable

¹¹ This one-time response was entered parametrically, rather than by rule change.

¹² A Blue Agent rule was changed in order to effect this response to Egypt's offer.

assumptions were highlighted, not obscured, by RSAC gaming and (2) that Scenario Agent's flexibility allows any or all of these assumptions.

Move 1.6: Other Early GCC Response

+-----+	SITUATION: Each of these countries has received a request
	from Blue for logistics assess.
S. ARABIA	
BAHRAIN	RESPONSE: Each country denies logistics access.
KUWAIT	
QATAR	RATIONALE: Saudi Arabia perceives a serious threat from
UAE	the major Red presence in the Indian Ocean; the others do
	not. All are assumed to be white oriented and are
	reluctant to take sides in the superpower conflict.

↓

Applicable Rules. It was assumed that the GCC states other than Oman would be initially reluctant to support any U.S. presence in the Persian Gulf.

Saudi Arabia's threat perception is questionable, as previously discussed in the case of Egypt and Oman. The rule has been changed to read:

- [12] If the actor = [is] a GCC country
 and (Persian-Gulf's Red-presence = [is] Red-major
 or Arabian-Sea's Red-presence = [is] Red-major),
 let the actor's threat be serious
 and record serious [threat] as
 "major Red naval presence in Gulf or Arabian Sea".

If these countries were assumed to be Blue, rather than white (neutral), oriented, those perceiving a determinate threat would agree with the Blue request.

Case O. In Case O (Oil Suppliers and Consumers) all GCC Persian Gulf oil suppliers perceive a serious threat in Red mobilization on the Iranian border and grant Blue logistics access.¹³

¹³ A cooperative response could have been achieved by changing these countries' temperaments from initially-reluctant to reliable. That was not done in Case O; instead, a temporary rule was written to the effect that any country economically dependent of the Strait of Hormuz would see a serious threat in Red mobilization on the Iranian

Move 1.7: Early German And British Response

+-----+ FRG UK +-----+ +-----+ +-----+ ↓	SITUATION: FRG and UK have received requests from Blue that they commit forces on call to Blue as may be needed to counter a Red invasion of Iran. They have also been asked to provide logistics access for Blue RDF deployment. RESPONSE: FRG and UK decline to provide the requested assistance. RATIONALE: FRG and UK do not perceive a determinate threat to their interests in the current situation. They are reluctant to take sides in the Iranian conflict.
--	---

Applicable Rules. During review a question was raised about two of America's closest allies, the UK and FRG, being assumed to be reluctant, while Egypt and Oman were assumed to be reliable.

It is impossible to predict with any certainty whether the FRG or UK in 1990 would offer to involve their forces in some role to thwart a Soviet invasion of Iran. If either country did agree to the Blue request, Red would scale down its ambitions, as in Cases S and O.

Move 1.8: Early French Response

+-----+ FRANCE +-----+ +-----+ +-----+ ↓	SITUATION: France has received a request from Blue to commit forces on call to Blue as may be needed to counter a Red invasion of Iran. RESPONSE: France declines to provide the requested assistance. RATIONALE: France does not perceive a determinate threat to its interests in the current situation. It is reluctant to take sides in the Iranian conflict.
---	---

Case C. In Case C (Oil Consumers) European countries dependent on Persian Gulf oil perceive a serious threat in Red mobilization on the Iranian border. Belgium, Denmark, France, Luxembourg, and the

border. Changing a rule, even temporarily, is often preferable to changing assumptions because it becomes a candidate rule for other problems.

Netherlands offer Blue logistics access. Several countries call up components of their reserve forces. France is willing to side with Blue publically, but is reluctant to commit its forces in advance of a Red move into Iran. The net effect is negligible, and the case converges to the baseline scenario.

Move 1.9: Early Spanish And Portugese Response

<div> <div>SPAIN</div> <div>PORTUGAL</div> </div>	<p>SITUATION: Spain and Portugal have received requests from Blue for logistics assess; they are aware of Red actions.</p>
	<p>RESPONSE: Each grants logistics access to Blue.</p>
<div>↓</div>	<p>RATIONALE: Neither perceives a determinate threat to itself in the situation, but each agrees to the Blue request because it regards itself as a reliable Blue ally.</p>

Applicable Rules. Both Spain and Portugal were assumed to be reliable (hence willing to grant Blue logistics access whenever asked). It is important for RDF deployment that one or both of these countries grant logistics access.

Move 1.10: Early Turkish Response

<div> <div>TURKEY</div> </div>	<p>SITUATION: Turkey has received a request from Blue for logistics access.</p>
	<p>RESPONSE: Turkey denies logistics access.</p>
<div>↓</div>	<p>RATIONALE: Turkey does not perceive a determinate threat to itself in the situation. It is reluctant to take sides in the Iranian conflict.</p>

Case T. In Case T (Turkey) Turkey perceived a serious threat in Red mobilization of the Iranian border and, accordingly, granted Blue logistics access. During rule review it was argued that Turkey would not view anything less than an attack upon its territory as warranting active cooperation with Blue in Southwest Asia. There are at least two alternative ways a Scenario Agent user could cause the model to reflect such behavior. First, by not including a rule by which Turkey perceives a determinate threat from Red actions outside Turkish territory. Second, by assuming Turkey's temperament to be neutral.

Move 1.11: Early Italian And Greek Response

+-----+ ITALY GREECE +-----+	SITUATION: Italy and Greece have received requests from Blue for logistics access.
	RESPONSE: Both deny logistics access.
	RATIONALE: Neither country perceives a determinate threat to its interests in the current situation. Both are reluctant to take sides in the Iranian conflict.

Applicable Rules. Both countries were assumed to be initially-reluctant. Perceiving no determinate threat, neither agree to the Blue request.

Phase 2: Final Preparations To Deter Or Counter

Move 2.1: Blue Regional Objective Selection

+-----+ BLUE +-----+	SITUATION: Red is mobilizing. Blue is getting some access to Southwest Asia.
	RESPONSE: Blue alerts the RDF and begins to marshal military assets. Blue renews efforts to gain logistics and combat access and to obtain a commitment from allied countries to involve their own forces if needed.
	RATIONALE: Red intentions are becoming clearer; base access rights are still not fully established.

Applicable Rules. Key aspects of the situation include (1) only Spain, Portugal, and Egypt have granted Blue basing and transit rights and (2) no NATO nation has agreed to commit forces to the defense of Southwest Asia. Under these conditions, Blue selects a moderate response objective and renews efforts to obtain allied support.

Nonsuperpower Impact. Nonsuperpower actions had the following affects on Blue decisionmaking:

Action	Country	Impact on Blue Regional Objective
Involvement	France	Major
	UK	Major
Cooperation	Oman	Major
	Saudi Arabia	Major

Move 2.2: Red Regional Plan Selection

+-----+
| RED |
+-----+

SITUATION: Red mobilization is over half complete. Red must now select a specific force employment option.

RESPONSE: Red decides to proceed with a deliberate, conventional invasion, striking Blue on D-day if necessary to preserve operations plan time lines.

RATIONALE: Noting that Blue has not yet moved forces into Iran and that Saudi bases are not yet available to Blue, Red decides to prepare for a conventional, deliberate invasion of Iran with the objective of occupying the entire country.

Applicable Rules. The Red Agent rule reads as follows:

IF The US is not yet deploying the full RDF (less than 2 TFWs or 1 division)

AND The UK, France, and the FRG have not agreed to commit forces to Southwest Asia

AND Saudi Arabia has not granted basing rights to the US

AND There are no US forces in Iran

THEN Select plan B2

AND Halt mobilization of X1 airborne divisions, X2 frontal regiments, X3 LRA aircraft, and X4 SNA aircraft

AND Continue mobilization and deployment of remaining forces

AND Continue reenforcing Red naval forces in Indian Ocean

ELSE IF US has not yet commenced mobilizing the RDF strategic mobility forces

AND France, FRG, and UK have not agreed to commit forces to Southwest Asia

AND The following nations have not granted Blue base rights: Saudi Arabia, Egypt, and one of the two, Spain/Portugal, and one of the three, UK/FRG/Italy

THEN Select plan B1

AND Continue reenforcing Red naval forces in the Indian Ocean

ELSE Implement plan B3¹⁴

Case E. In Case E Egypt's offer of forces has significant impact on Red's decision. Red rejects the plan to invade all of Iran and, instead, decides to limit its objectives to northern Iran. The key factor is Blue's ability to project a larger force--including the equivalent of an Egyptian armored division--into Iran.

Case O. In Case O, as in Case B, Red rejects its most ambitious war plan because Blue has begun mobilizing the RDF, strategic mobility forces, Civil Reserve Air Fleet (CRAF), and Military Sealift Command (MSC). Unlike Case B, in Case O Red also rejects its moderately ambitious war plan because, although several factors favor the plan (Blue is not yet deploying the full RDF; UK, France, and FRG have not agreed to commit forces to Southwest Asia; and there are no Blue forces yet in Iran), Saudi Arabia has now granted logistics access to Blue. Red considers the military difficulty and risks of out-of-theater escalation too great to warrant adopting the moderately ambitious plan at this time. Red decides to limit its invasion objectives to northern Iran.

Case S. As in Case O, Red decides to limit its invasion objectives

¹⁴ Plan B1 is a *blitzkrieg* high-risk, potentially high-payoff plan. Plan B2 is an invasion in accordance with standard Soviet doctrine. Plan B3 is a cautious step-by-step campaign tailored to the vigor of the Blue reaction.

to northern Iran. Whereas in the Oil Supplier case this change was prompted by Saudi granting of logistics access not occurring in the baseline scenario, in Case S Israeli granting of logistics access prompted the same change. Red did not view Saudi allowance of overflight as a significant change from the baseline.

Nonsuperpower Impact. Red decisionmaking dependencies on UK, France, FRG, Saudi Arabia, Egypt, Spain, and Portugal are clear from the rule. We have seen that under baseline case assumptions all but Egypt, Spain, and Portugal have not seen fit to support U.S. objectives prior to Red's invasion of Iran. Different assumptions could have strong impact on this Red decision. If, for example, Saudi Arabia agreed to host nation access or UK, France, or FRG agreed to place their forces on call, Red would have scaled down its objectives to the B3 plan.

Action	Country	Impact on Red Plan Selection
Involvement	Egypt	Major
	France	Major
	FRG	Major
	UK	Major
Cooperation	Egypt	Major
	Israel	Major
	France	Minor
	FRG	Minor
	Portugal	Minor
	Spain	Minor
	UK	Minor

Move 2.3: Saudi Response

+-----+	SITUATION:	Saudi Arabia has received a request from Blue for logistics access and is aware of Red naval reinforcement of Indian Ocean naval forces. Two Blue tactical fighter squadrons arrive at Ras Banas, Egypt.
SAUDI		
ARABIA		

+-----+	RESPONSE:	Saudi Arabia grants logistics access to Blue.
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	RATIONALE:	Saudi Arabia perceives a serious threat in the major Red presence in the Indian Ocean and grants Blue logistics access to counter the threat.

Case S. In Case S (Saudi-Israeli) Saudi Arabia views with alarm the possibility of a Red move into Iran, but questions (a) Blue resolve and capability, (b) resolve of European allies to help Blue, (c) ability of Red to win in Iran, and (d) whether there is consensus among non-aligned nations with respect to Red. Saudi intent is to prevent damage to its territory. Saudi Arabia informs Blue it is prepared to extend overflight rights (i.e., partial logistics access) to Blue, but no military units are to be deployed in-country. The Saudis call up reserves. Saudi Arabia advises Red that continued moderate Saudi behavior is conditional on Red's staying out of Muslim nations. Saudi Arabia asks FRG, UK, France, and Turkey whether they intend to grant Blue logistics access and whether they plan to involve their own forces. The Saudis solicit Iraqi and Egyptian views on the advisability of Arab cooperation with Blue.

Israel grants logistics access, calls up reserves, and queries Blue about its intentions, the role of Israeli neighbors, Blue offsets and guarantees, and Red plans.

Move 2.4: Other GCC Response

<p> +-----+ BAHRAIN KUWAIT QATAR UAE +-----+ </p>	<p> SITUATION: Bahrain, Kuwait, Qatar, and UAE have received requests from Blue for logistics assess and are aware of Red actions. RESPONSE: They grant logistics access to Blue. RATIONALE: They do not perceive a determinate threat to themselves in the situation, but agree to the Blue request because they regard themselves as reliable Blue allies. This change in temperament from reluctant to reliable is the result of intensive consultations with Blue since the beginning of the crisis. </p>
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Applicable Rules. The difference between these countries' behavior now and their earlier behavior is due to their now being assumed to be Blue-oriented reliable allies. These parameters were changed by the analyst, rather than by Scenario Agent rules. This was done to make the scenario track prespecified events along a particular time line. It can be rationalized by assuming that these GCC states decide to change their orientation and temperament as the crisis builds. Whether or not one agrees with this change of orientation and temperament in mid-game, the automatically generated RSAC game record shows the changed assumptions explicitly and invites discussion.

Case L. In Case L (Libya) the Blue fighter squadrons in Egypt are perceived as a serious threat to Libya. Libya responds by requesting a Red tripwire presence. Red complies immediately, sending personnel for surface to air missile (SAM) units and one tactical fighter wing to Libya via Aeroflot to man equipment prestocked in Libya. Red also deploys naval forces to Libyan waters.

Noting this, Blue routes its RDF deployment northward in the Mediterranean, effectively avoiding the potential threat from Soviet forces in Libya. Neither Red nor Libya engage Blue forces before D-day. The Libyan action, therefore, has no appreciable effect on RDF deployment to the Southwest Asian theater.

Case L converges to the baseline scenario following naval engagements in the Mediterranean shortly after Red invades Iran.

Move 2.5: Blue RDF Deployment Decision

BLUE

SITUATION: Blue observes that Red is nearly fully mobilized in SW Asia.

RESPONSE: Blue sets DEFCON 3 and deploys the RDF to SW Asia with the intent to land in Iran if Red invades. Blue asks Egypt, Turkey, Bahrain, Kuwait, Oman, UAE, Saudi Arabia, and Qatar for a commitment of forces and permission to launch strikes from their territory, if Blue engages in combat against Red forces.

RATIONALE: Blue is prepared to defend in Iran.

Applicable Rules. Blue continues to prepare for possible armed conflict in Iran. Nonsuperpower behavior is not explicitly factored into Blue decisionmaking at this juncture.

Move 2.6: Egyptian And GCC Response

EGYPT
GCC

SITUATION: Each of these countries has received a request from Blue for combat access and to place their forces on call to Blue if needed.

RESPONSE: Each grants combat access and places its forces on call to Blue.

RATIONALE: Egypt, Oman, and Saudi Arabia perceive a serious threat in the current situation. The others do not, but all of these countries recognize that their long-term interests are best served by performing as reliable Blue allies.

Move 2.7: Red Regional Implementation Decision

+-----+
| RED |
+-----+

SITUATION: Blue has major forces en route to SW Asia. Red and Blue forces in Europe are alerted.

RESPONSE: Red decides to go ahead with the planned invasion of Iran.

RATIONALE: Red's intelligence estimate is that because of the size and closure rate of Blue forces now in motion Blue will be able to disrupt critical Red time lines, unless Red strikes Blue forces and bases on D-day.

Applicable Rules. The Red Agent rule reads, in part:

IF Blue can insert more than X ADEs in Iran by D+T3

OR Blue can deploy more than Y fighter/attack aircraft to the theater by D+T3

THEN Alert Warsaw Pact

AND Reenforce Red forces committed to Iran by Q motorized rifle divisions (MRDs) and Z frontal aviation aircraft

AND Attack Blue bases and naval forces in theater on D-day

AND Execute Plan B2

AND Send message to Blue warning against escalation and stating willingness to stop attacks on Blue forces if they withdraw from theater

AND Send message to all nations that are Blue cobelligerents or coordinates: "demand change you white noncoordinate"

ELSE Execute Script B2, but do not attack Blue forces and bases in Southwest Asia

Case E. In Case E Red reassesses the situation and concludes that Blue's capabilities make the plan too risky. Red cancels plans to invade Iran.

Case S. Israel sees in the situation an opportunity for possible reduction of Saudi-Israeli tension or conflict, but is concerned because Blue has not stated its intentions adequately. Israel queries Iraq, Jordan, and Syria about their intentions.

Saudi Arabia, seeking to prevent damage to its territory, justifies continued relatively noncooperative response on two grounds: (a) Blue European allies are not supporting Blue (so why should the Saudis?) and (b) Blue forces in the other, cooperating Persian Gulf states may be sufficient (so why put Saudi territory at risk?). The Saudis attempt to coordinate with other Arab states, offer financial support to the Iranian Western-oriented military faction, and begin recruiting a 10,000-man Pakistani mercenary force to provide security for five major Saudi air bases.

Case T. In Case T Blue dispatches tactical fighter squadrons to Turkey. This prompts Red to attack targets in Turkey on D-day. As a NATO member under attack, Turkey calls for NATO mobilization, a major departure from Case B and other variant runs.

Nonsuperpower Impact. If Blue allies had been willing to place forces on-call, Blue would have been able to insert more than X ADEs by D+T3, and Red would have avoided attacking Blue bases in Southwest Asia. Thus, Egypt and the GCC states would not have become locations of conflict.

Action	Country	Impact on Red Regional Implementation
Involvement	Egypt	Major
	France	Major
	FRG	Major
	UK	Major
Cooperation	Turkey	Minor

Phase 3: Response to Southwest Asia Invasion

Move 3.1: Turkish Response to Invasion of Iran

+-----+	SITUATION: Turkey has recieved a request from Blue for combat access.
TURKEY	RESPONSE: Turkey grants Blue combat access.
+-----+	
	RATIONALE: Turkey perceives a serious threat in the major Red presence now in Iran.
↓	

Turkey's response is triggered by the following threat perception rule:

[6] If the actor = [is] Turkey,
if (Iran's superpower-presence = [is] Red-major
or Iraq's superpower-presence = [is] Red-major
or Saudi.Arabia's superpower-presence = [is] Red-major
or Pakistan's superpower-presence = [is] Red-major
or Syria's superpower-presence = [is] Red-major),
let the actor's threat be indirectly-serious
and record indirectly-serious [threat] as
"introduction of major USSR forces in region".

Move 3.2: Blue Response to Red Invasion of Iran

+-----+	SITUATION: Red has invaded Iran and attacked Blue forces in Bahrain, Egypt, Kuwait, Oman, Qatar, UAE, and in the Indian Ocean. Red has struck and closed the Suez Canal.
BLUE	RESPONSE: Blue deploys forces into Iran and escalates the war at sea to include approaches to the theater in the South China Sea. Blue alerts SAC and NORAD.
+-----+	
	RATIONALE: Blue regards escalation at sea to be a logical extension of the right of self-defense.
↓	

Applicable Rules. Each of the attacked states become Mid-East combatants siding with Blue.

Blue has two criteria for going into Iran following the Red invasion. The first, availability of Turkish bases for launching attacks on Red forces in Iran, is met. The second, ability to land a specified number of divisions in Iran within time limits, is not met. Blue is inclined to forward defense and believes it necessary to defend the Persian Gulf as far forward as possible. Blue is willing to risk some limited escalation to NATO by executing such a defense from Turkish bases. Blue also recognizes that it must secure a lodgement in Iran to counter the Red attack. Blue is not, however, willing to risk the RDF unless enough forces can be landed in Iran to mount a successful defense. Because of Saudi noncooperation, Blue decides not to land forces in Iran or to attack Red forces from positions outside Iran.

Case S. On D-day Red invades northern Iran only. Saudi Arabia protests the invasion. Israel views the Red invasion, the potential Red presence in the Persian Gulf, and NATO inaction with concern. Israel perceives an implied threat to Iraq and, ultimately, to Syria and Jordan; Israel sees in this an opportunity to explore ways of lessening Red influence in Syria and Iraq. Israel executes maximum call-up short of mobilization, rejecting mobilization because of its high economic cost and there being no obvious use for Israeli forces. Israel grants Blue combat access, but does not place its forces on call to Blue. Israel expects a Blue guarantee of protection against Red retaliation. Israel informs Red that it views an enlarged Red presence in the Mid-East as destabilizing.

Not having attained access from Saudi Arabia before the Red invasion of Iran, Blue cannot land the requisite number of divisions in Iran within time limits. Blue, therefore, does not land forces in Iran.

Nonsuperpower Impact. Turkish and Saudi actions have a major impact on Blue plan implementation.

Action	Country	Impact on Blue Regional Implementation
Cooperation	Saudi Arabia	Major
	Turkey	Major

Move 3.3: Red Counter-Escalation at Sea

+-----+
| RED |
+-----+

SITUATION: Red has occupied northern Iran, but is faced with Blue's landings in Iran and escalation at sea. Major Blue forces have arrived in Kuwait.

RESPONSE: Red continues its campaign into southern Iran and counter-escalates at sea.

RATIONALE: Believing Red time lines are threatened by Blue naval forces, Red counter-escalates at sea, attacking Blue naval forces and shipping in the South Atlantic, as well as the Indian Ocean and South China Sea.

Move 3.4: Blue Counter-Escalation

+-----+
| BLUE |
+-----+

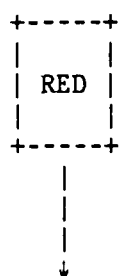
SITUATION: Blue observes Red advancing southward in Iran toward ground combat with Blue forces in theater.

RESPONSE: Blue decides to defend its current positions and prepares to withdraw from Iran. Blue launches air strikes on Red forces in Afghanistan.

RATIONALE: Blue bases its decision on force closure rates.

Phase 4: Preparations in Europe

Move 4.1: Warsaw Pact Mobilization



SITUATION: Red ground forces are in combat with Blue in Iran.

RESPONSE: Red mobilizes the Warsaw Pact.

RATIONALE: Red is uncertain of achieving a favorable outcome in Iran. Red hopes to bleed off Blue resources from SW Asia and to prepare for possible conflict in Europe.

Applicable Rules. The Red decision to mobilize the Warsaw Pact is based on Blue actions and Red's estimate of outcomes in Iran. Having decided to mobilize in Europe, Red's immediate concern with nonsuperpower behavior is limited to the following:

IF Blue is using Turkish air bases to attack Red forces in Iran (more than 1 tactical fighter wing)

THEN Initiate air attacks on military air bases throughout Turkey

Nonsuperpower Impact. The Turkish action has minor impact on Red plan implementation.

Action	Country	Impact on Red Regional Implementation
Cooperation	Turkey	Minor

Move 4.2: Blue Call for NATO Mobilization

<div style="border: 1px dashed black; padding: 5px; width: fit-content;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">BLUE</div> </div> <div style="border-left: 1px dashed black; height: 80px; margin-left: 5px;"></div>	<p>SITUATION: Blue observes a deteriorating military situation in Iran and Warsaw Pact mobilization in Europe.</p> <p>RESPONSE: Blue decides to continue current combat operations in Iran, divert RDF elements en route to Iran to the Arabian Peninsula, reenforce Europe, and request NATO mobilization.</p> <p>RATIONALE: Blue does not believe it can defeat Red in Iran. Warsaw Pact mobilization is seen to demand response in kind.</p>
--	--

Applicable Rules. Blue's decision to call for NATO mobilization is triggered by detection of Warsaw Pact mobilization.

Nonsuperpower Impact. To the extent that Warsaw Pact mobilization is viewed as nonsuperpower action, it has a major impact on Blue's plan selection for Europe.

		Impact on Blue Call for NATO Mobilization
Action	Country	
Involvement	Non-USSR WP	Major

Move 4.3: NATO And French Mobilization

<div style="border: 1px dashed black; padding: 5px; width: fit-content;"> <div style="border: 1px solid black; padding: 2px; text-align: center;">NATO FRANCE</div> </div> <div style="border-left: 1px dashed black; height: 80px; margin-left: 5px;"></div>	<p>SITUATION: NATO members and France have received requests from Blue to mobilize and place their forces on call for combat in Europe if needed.</p> <p>RESPONSE: They comply with Blue request.</p> <p>RATIONALE: Countries bordering on the Warsaw Pact perceive a serious threat in Pact mobilization. All these countries perceive themselves to be reliable Blue allies.</p>
---	---

Case P. In Case P (Pipeline) Belgium, France, FRG, Italy, and the Netherlands attempt to remain neutral, having been assured energy supplies by Red. This leads to a departure from the baseline scenario at this point. Canada, Denmark, Greece, Iceland, Luxembourg, Norway, Portugal, Spain, Turkey, and the UK respond favorably to Blue requests for mobilization and force commitment on call. Belgium, France, FRG, Italy, and Netherlands, fearing loss of energy supplies, refuse to cooperate with Blue. FRG, however, independently mobilizes its forces in response to the serious threat from Red mobilization on its border. Red sees an opportunity to break up NATO and possibly eliminate the Blue presence in the FRG.

Move 4.4: Red Escalation at Sea

+-----+
| RED |
+-----+

SITUATION: Blue is stubbornly defending lodgements in southern Iran.

RESPONSE: Red attacks Blue naval forces and shipping at sea worldwide, but avoids attacking non-Blue NATO shipping.

RATIONALE: The intent is to cut Blue-NATO sea and air lines of communication, to slow Blue reenforcement of Europe. Although the Warsaw Pact mobilization was originally intended to divert Blue resources from Southwest Asia, the deteriorating situation convinces Red that it must prepare for war in Europe and preempt Blue if necessary.

Move 4.5: Blue Withdrawal from Iran

+-----+
| BLUE |
+-----+

SITUATION: Red achieves a breakthrough on the remaining axes in Iran.

RESPONSE: Blue withdraws forces from Iran. Blue mines Baltic and Turkish straits.

RATIONALE: The RDF position in Iran is considered untenable. The mining operation is considered a logical extension of the sea war in the North Atlantic.

Move 4.6: Red Decision To Invade Western Europe

+-----+
| RED |
+-----+

SITUATION: Major Blue reinforcements are landing in Europe and moving forward to the frontiers. The war is continuing in Southwest Asia.

RESPONSE: Red decides to invade western Europe, setting this date as D-T7.

RATIONALE: Red considers war in Europe inevitable. Red follows its doctrine of preemption in such cases.

Case P. In Case P France, Belgium, Netherlands, and Italy have refused to join the NATO alert. The following Red rule is applied:

IF *WP has completed its mobilization and deployment in Europe*
 AND Red has not had to divert forces from Europe to SWA
 AND Red has critical intelligence assessment that NATO's
 immediate use of nuclear weapons would be very unlikely
THEN *Set DE-Day to T8 days from now*
 AND Limit all air ground attacks to FRG
 AND Send messages to France, Belgium, Netherlands, and
 Italy, "demand you remain white noncoordinate noncombatant"

Red launches a massive conventional invasion of the FRG. No targets outside FRG are struck. Blue, Canada, FRG, and UK immediately join combat against Red, Czech, GDR, and Polish forces in the FRG. Denmark, Greece, Iceland, Luxembourg, Norway, Portugal, Spain, and Turkey remain on call. Denmark, Luxembourg, Norway, and Turkey request additional U.S. combat force presence in their countries. Though perceiving a serious threat from the Red invasion of the FRG, the uncommitted NATO members remain neutral.

Red's intelligence suggests that NATO is very unlikely to respond to an attack with immediate use of nuclear weapons. The reluctant Blue allies remain unwilling to commit themselves to supporting Blue. Red decides to invade only the FRG and assures Belgium, France, Italy, and the Netherlands that it will continue to respect their neutrality.

Nonsuperpower Impact. Red bases its selection of European objective largely on NATO mobilization and cohesiveness.

Action	Country	Impact on Red Decision to Invade W. Europe
Preparedness	Non-U.S. NATO	Major

Phase 5: War in Europe

Move 5.1: Blue Response to European Invasion

<div style="border: 1px dashed black; padding: 5px; width: fit-content;">BLUE</div> <div style="border-left: 1px dashed black; height: 80px; margin-top: 5px;"></div>	<p>SITUATION: Red strikes France and European NATO with conventional weapons.</p> <p>RESPONSE: Blue defends with conventional weapons, but requests NATO nuclear release authority. Blue strikes Warsaw Pact countries, except for the Red homeland, with conventional weapons.</p> <p>RATIONALE: Blue considers there to be no appreciable advantage in initiating use of theater nuclear weapons, but predicts Red forces reaching the western border of the FRG in T9 days.</p>
---	---

Case P. Blue estimates that it could not win conventionally or with the use of theater nuclear weapons. Red and Blue agree to a cease-fire predicated on a Red demand for removal of Blue troops from the FRG and the beginning of negotiations for the reunification of Germany. A cease-fire is also called in Southwest Asia.

Action	Country	Impact on Blue Response to European Invasion
Involvement	Non-USSR WP	Major

Move 5.2: NATO And French Nuclear Release Decision

-----+ SITUATION: NATO members and France have received requests
 | NATO | from Blue for nuclear release authority over nuclear
 | FRANCE | weapons located in those countries.
 +-----+
 | RESPONSE: They comply with Blue request.
 |
 ↓ RATIONALE: These countries are now reliable Blue allies
 and comply with almost any Blue request for cooperation.

Applicable Rules. Assertive nonsuperpower behavior was not gamed in any of the cases run. If France were assumed to be assertive, the following rule would have been applied in Cases B, C, and L:

```
[2] If the actor is nuclear-capable
and the actor's orientation ~= Red
  (if the actor's threat = grave
  and the actor is located in Europe
  and the actor's European-involvement ~= European-nuclear-combatant,
  let the actor's European-involvement be European-nuclear-combatant
  and record European-nuclear-combatant as
  "grave threat demands full response",
  otherwise if the actor's threat = one of indirectly-grave or serious
  and (the Red European weapon's type = nuclear
  or FRG is a conflict location),
  if the actor's temperament = reliable
    send {return, "FROM: ", the actor,
    " TO: USSR", return, "DEMAND REVERSE ESCALATION", return}
  otherwise send {return, "FROM: ", the actor,
  " TO: USSR", return, "DEMAND YOU NOT ESCALATE ARENA", return}).
```

Note that this rule would have France, perceiving a grave threat from Red conventional attack, strike the USSR with the war's first use of nuclear weapons. This comes about only if France is assumed to be assertive.

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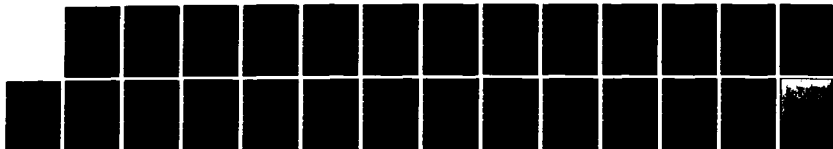
STRATEGIC ANALYSIS AS THOUGH NONSUPERPOWERS MATTER(U)
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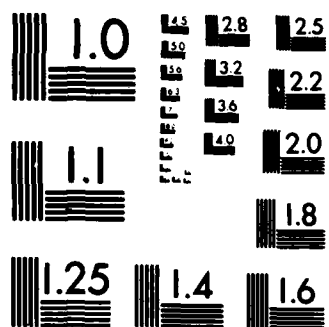
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UNCLASSIFIED

F/G 15/7

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Move 5.3: Red Theater Nuclear Preemption

+-----+
| RED |
+-----+

SITUATION: Red has started to penetrate Blue defenses in the FRG. Red learns that Blue has requested nuclear release authority.

RESPONSE: Red preempts with theater and battlefield nuclear weapons in Europe and SW Asia, initiates civil defense, initiates strategic antisubmarine warfare with nuclear weapons, and neutralizes Blue satellites.

RATIONALE: Soviet doctrine rejects being preempted and Red concludes that the Blue request for nuclear release makes nuclear war likely, given NATO's losses to conventional weapons.

Move 5.4: Blue Theater Nuclear Response

+-----+
| BLUE |
+-----+

SITUATION: Blue and NATO forces in all combat theaters are under nuclear attack.

RESPONSE: Blue strikes Red theater nuclear forces, including those in Red homeland.

RATIONALE: Blue considers this a militarily necessary response.

Applicable Rules. If the FRG were assumed to be assertive, the following rule would apply:

[3] If the actor's threat = grave
and the actor's side = Blue
and the actor is located in Europe
and USSR's European-involvement = one of
European-combatant or European-nuclear-combatant
and 'USSR is a [conflict] location' is not provably true,
send {return, "FROM: ", the actor,
" TO: US", return, "REQUEST NUCLEAR STRIKE AGAINST USSR", return}
and assert the actor did seek aid from (US) at the present-time.

Phase 6: World War

Cases B, C, and L escalated to intercontinental nuclear weapon exchanges. The rules used in these RSAC runs were such that nonsuperpower behavior had no effect on superpower decisions after intercontinental strikes had been launched.

COMPARISON OF NONSUPERPOWER IMPORTANCE ACROSS SCENARIOS

Impact of Nonsuperpowers on Scenario Events

Figures 3.2 through 3.7 summarize major scenario events in Case B (baseline) and the cases that varied nonsuperpower behavior. Superpower forces and strategy rules were identical in each of these cases.¹⁵ All that differed among the cases were the assumptions about nonsuperpower behavior. Yet, the terminal events in these scenario variations ranged from Red's being deterred from invading Iran to escalation through intercontinental nuclear exchange. The range of differences could not have been more significant. It does not particularly matter whether the assumptions about nonsuperpower behavior were "correct." Each of the major scenario events was the result of superpower strategy as captured in Blue and Red Agent rules. These cases show the extent to which strategic outcomes could be affected by nonsuperpower behavior. Insofar as the *superpower* rules used here are plausible, these cases demonstrate that nonsuperpower behavior does matter.

Conditions at the end of each case run are shown in Table 3.2. It is interesting to note that only Cases O, S, and E ended in outcomes more favorable to Blue than would have been achieved by Blue's doing nothing (in which case Red would have taken Iran without opposition). In Case E this came about much as military planners would have it, with Red being deterred by the prompt Blue show of force, made possible in part by Egyptian involvement. Success in Case O also came about as planners would have it, with Red scaling down its objectives because of

¹⁵ Blue and Red Agent rules were augmented during the course of these case runs in order to respond appropriately to situations that were slightly different from those encountered in prior runs. None of the Blue or Red Agent rule augmentations were such as to change the outcomes of prior runs, were the prior runs to be generated anew using the augmented rules. Thus, for all practical purposes, the rules were identical. Forces were absolutely identical.

Scenario Events

Intercontinental
nuclear exchange

Blue attacks
theater forces
in Red homeland

Theater nuclear
war in Europe

Red invades
Western Europe

Red invades FRG

NATO mobilizes

WP mobilizes

Red/Blue direct
conventional combat

Red invades S. Iran

Red invades N. Iran

Blue deploys RDF
to SWA

Red forces to Libya

Blue prepares to
counter Red

Red prepares to
invade Iran

Red aborts in-
vasion plan

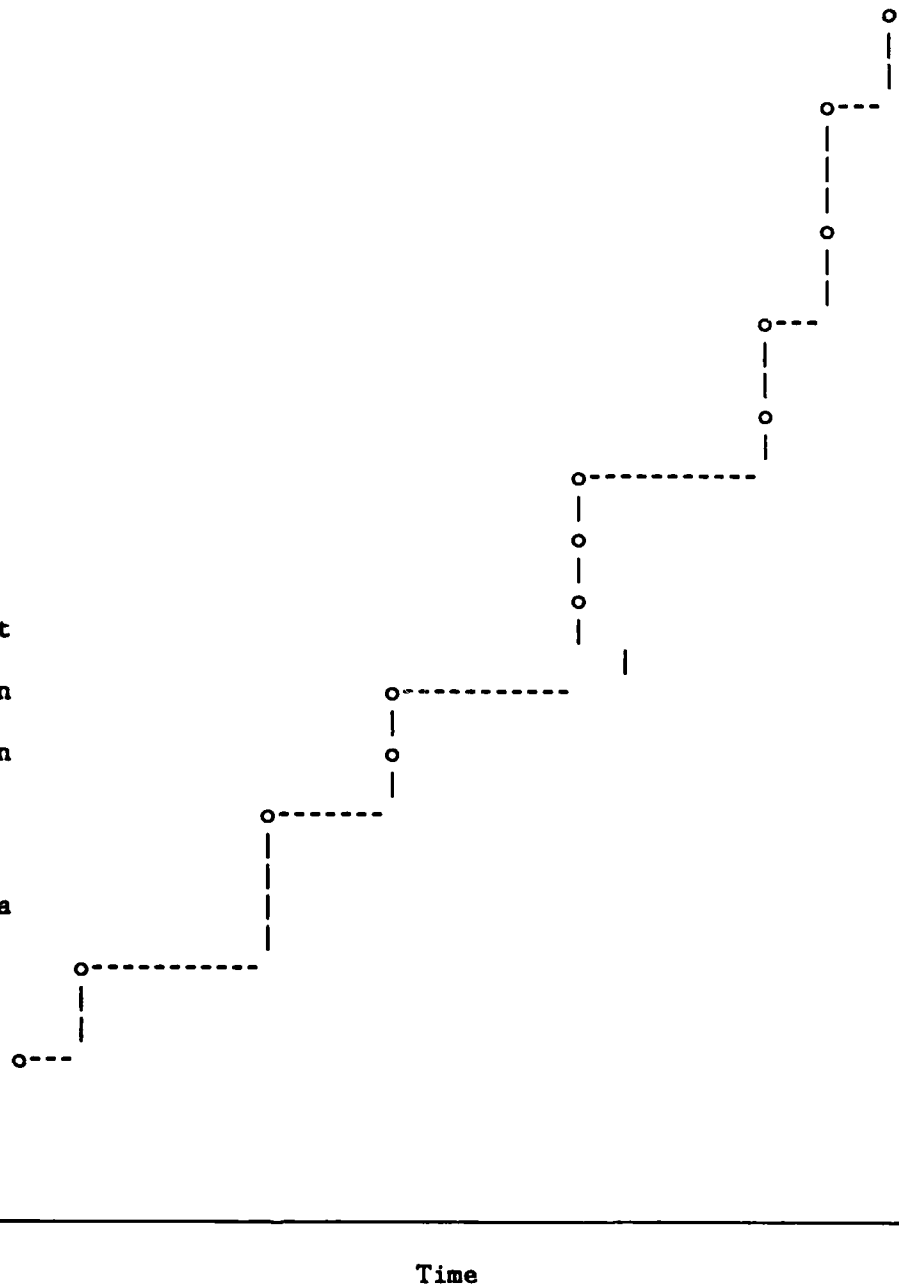


Fig. 3.2 -- Case B (baseline) and Case C (oil consumers) scenario events

Scenario Events

Intercontinental
nuclear exchange

Blue attacks
theater forces
in Red homeland

Theater nuclear
war in Europe

Red invades
Western Europe

Red invades FRG

NATO mobilizes

WP mobilizes

Red/Blue direct
conventional combat

Red invades S. Iran

Red invades N. Iran

Blue deploys RDF
to SWA

Red forces to Libya

Blue prepares to
counter Red

Red prepares to
invade Iran

Red aborts in-
vasion plan

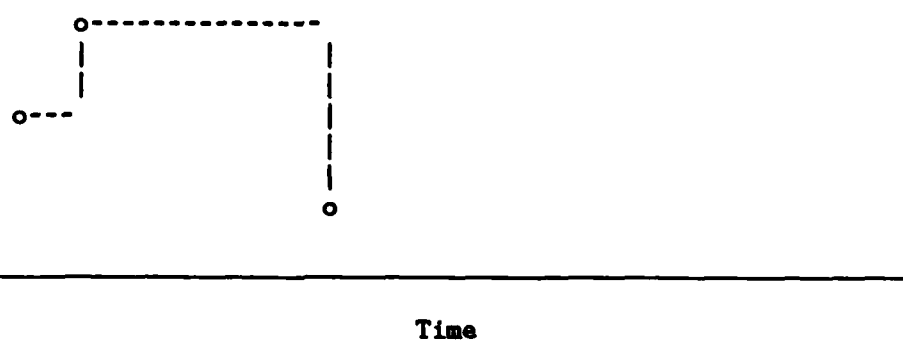


Fig. 3.3 -- Case E (Egypt) scenario events

Scenario Events

Intercontinental
nuclear exchange

Blue attacks
theater forces
in Red homeland

Theater nuclear
war in Europe

Red invades
Western Europe

Red invades FRG

NATO mobilizes

WP mobilizes

Red/Blue direct
conventional combat

Red invades S. Iran

Red invades N. Iran

Blue deploys RDF
to SWA

Red forces to Libya

Blue prepares to
counter Red

Red prepares to
invade Iran

Red aborts in-
vasion plan

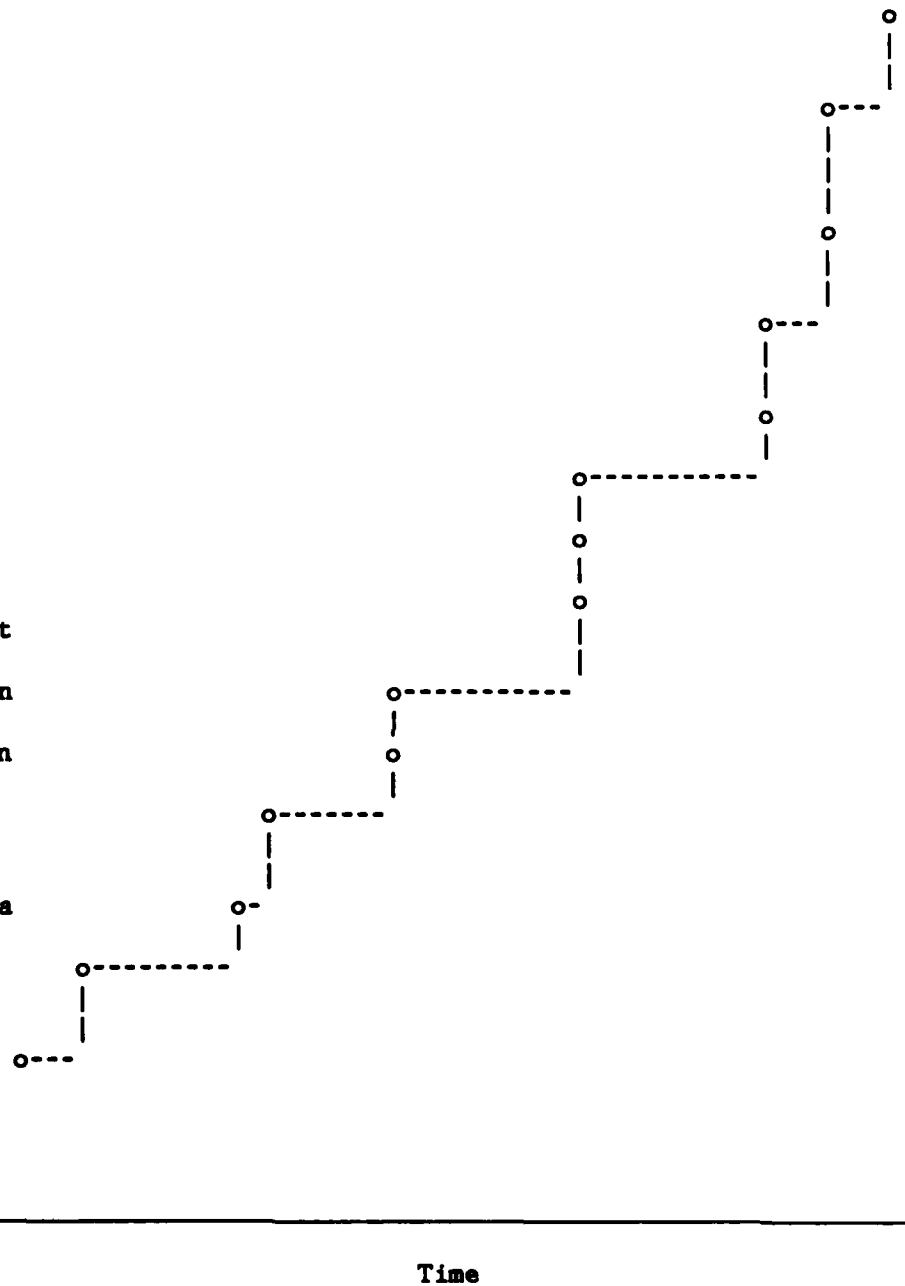


Fig. 3.4 -- Case L (Libya) scenario events

Scenario Events

Intercontinental
nuclear exchange

Blue attacks
theater forces
in Red homeland

Theater nuclear
war in Europe

Red invades
Western Europe

Red invades FRG

NATO mobilizes

WP mobilizes

Red/Blue direct
conventional combat

Red invades S. Iran

Red invades N. Iran

Blue deploys RDF
to SWA

Red forces to Libya

Blue prepares to
counter Red

Red prepares to
invade Iran

Red aborts in-
vasion plan

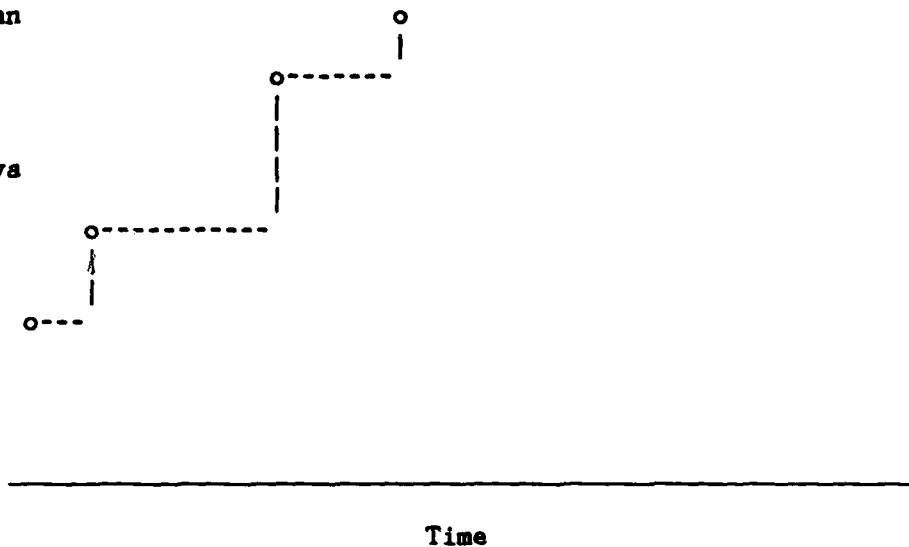


Fig. 3.5 -- Case O (oil consumers and suppliers) and Case S (Saudi-Israeli) scenario events

Scenario Events

Intercontinental
nuclear exchange

Blue attacks
theater forces
in Red homeland

Theater nuclear
war in Europe

Red invades
Western Europe

Red invades FRG

NATO mobilizes

WP mobilizes

Red/Blue direct
conventional combat

Red invades S. Iran

Red invades N. Iran

Blue deploys RDF
to SWA

Red forces to Libya

Blue prepares to
counter Red

Red prepares to
invade Iran

Red aborts in-
vasion plan

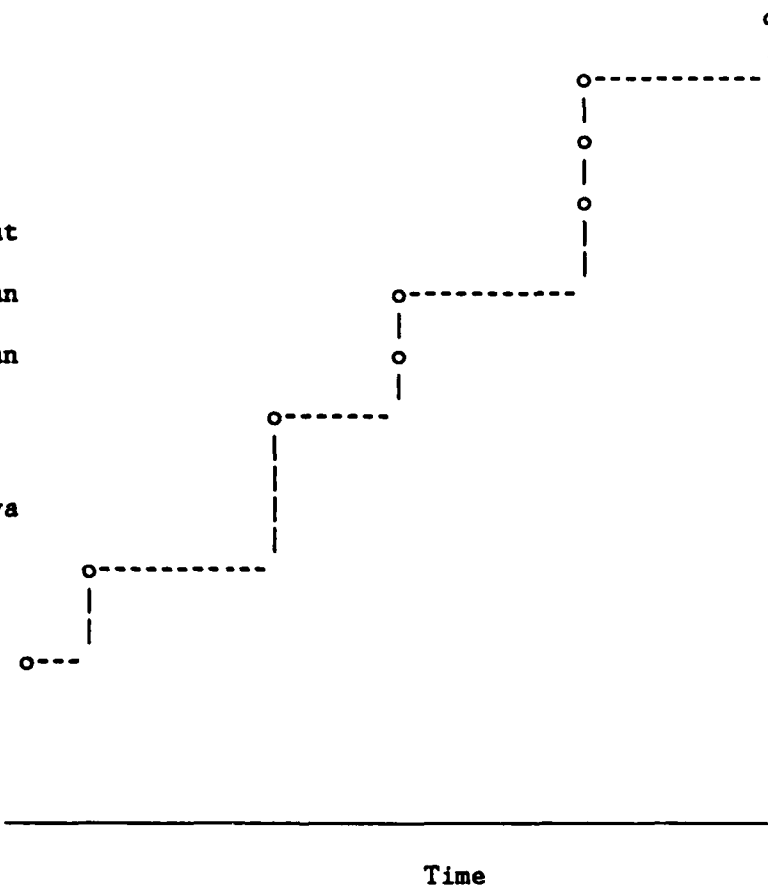


Fig. 3.6 -- Case P (pipeline) scenario events

Scenario Events

Intercontinental
nuclear exchange

Blue attacks
theater forces
in Red homeland

Theater nuclear
war in Europe

Red invades
Western Europe

Red invades FRG

NATO mobilizes

WP mobilizes

Red/Blue direct
conventional combat

Red invades S. Iran

Red invades N. Iran

Blue deploys RDF

Red forces to Libya

Blue prepares to
counter Red

Red prepares to
invade Iran

Red aborts in-
vasion plan

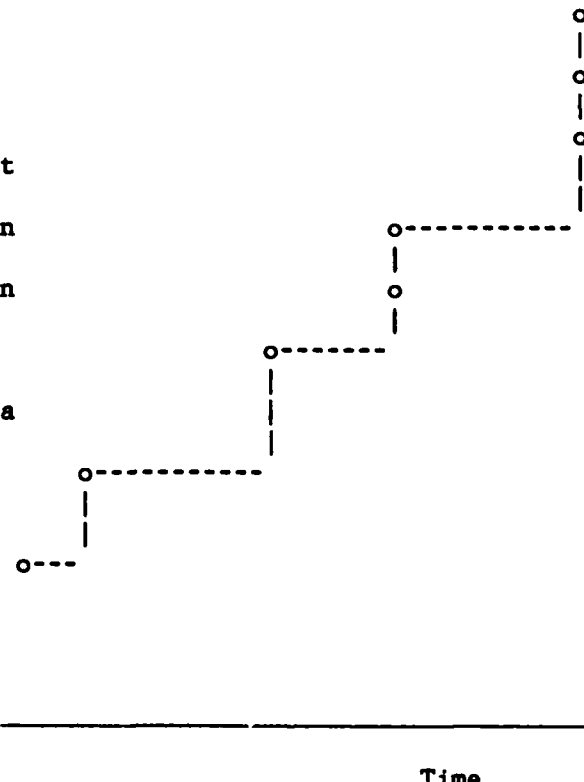


Fig. 3.7 -- Case T (Turkey) scenario events

Table 3.2
CONDITIONS AT END OF RUNS

Case	Nonsuperpower Assumptions	Conditions at End of Scenario
B	Baseline	Central nuclear exchange (NATO losing in FRG; RDF redeploying in SW Asia).
C	Oil consumers perceive early threat	Central nuclear exchange (NATO losing in FRG; RDF redeploying in SW Asia).
L	Libya interferes with RDF deployment	Central nuclear exchange (NATO losing in FRG; RDF redeploying in SW Asia).
P	Europeans dependent on pipeline	Conventional Red/Blue combat in SW Asia and FRG; Blue exits both theaters.
T	Turkey becomes early combatant	Blue extricates RDF from Iran and redeploys to Arabian Peninsula. NATO and Warsaw Pact mobilized.
O	Oil consumers and suppliers perceive early threat	Red occupies N. Iran only. No Blue/Red combat.
S	Saudi-Israeli human teams	Red occupies N. Iran only. No Blue/Red combat.
E	Egypt offers forces on call	Red aborts planned invasion.

prompt Saudi cooperation. The outcome in Case S came about quite differently, in a fashion not uncommon in traditional political-military gaming, but with an interesting twist. Case S did not go as military planners would have it. Israeli limited cooperation with Blue was enough to cause Red to scale down its objectives, but Saudi reluctance to cooperate with Blue led to a Blue decision not to land forces in Iran. It is not uncommon for teams of human players in traditional games to dampen escalation well before reaching general nuclear war. (No such dampening occurs in strategic analyses using nuclear exchange models only.) What is unusual here is that human teams playing

nonsuperpowers had a dampening effect on escalation by computer models of the superpowers.

Nonsuperpower Impact on National Objectives

U.S. strategic national objectives include (1) deterrence, (2) satisfactory military performance if deterrence fails, and (3) alliance cohesion.¹⁶ The United States wishes to deter both nuclear and conventional attack against the territory and forces of the United States and its allies.¹⁷ Satisfactory military performance includes being able

to impose termination of a major war, on terms favorable to the United States and our allies, even if nuclear weapons have been used--and in particular to deter escalation in the level of hostilities.¹⁸

Alliance cohesion emphasizes NATO but includes other countries as well.

The cases run illustrate possible effects of different nonsuperpower behavior on these three national objectives. The effects are summarized in Table 3.3, which is intended to show in concept that variations on nonsuperpower behavior alone may be sufficient to change markedly the estimated impact of a given strategy.

Nonsuperpower Behavior as a Policy Variable

If nonsuperpower behavior is influenced by U.S. foreign policy, it can be viewed as a policy variable. In principle, this permits RSAC analyses to consider foreign policy along with strategy and force structure alternatives.

Table 3.4 is a very simple example of this based on illustrative RSAC gaming exercises. Here Case A includes an augmented Blue force.¹⁹ Case E includes the baseline force together with a prenegotiated

¹⁶ A. W. Marshall, 1982, relates these to Defense Department purposes in sponsoring RSAC development.

¹⁷ For a recent policy statement on this, see F. C. Ikle, "The Reagan Defense Program: A Focus on the Strategic Imperatives," *Strategic Review*, Spring 1982, pp. 11-18.

¹⁸ Ikle, p. 17.

¹⁹ The composition of this force augmentation is given in Winnefeld, pp. 15-16.

Table 3.3

ILLUSTRATIVE NONSUPERPOWER IMPACTS ON NATIONAL OBJECTIVES

Objective	Case							
	B	C	L	P	T	O	S	E
Deterrence								
SWA invasion	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
	/Failed//	/Failed//	/Failed//	/Failed//	/Failed//	Mixed::	Mixed::	Passed
	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
Theater nuc.	/Failed//	/Failed//	/Failed//	Passed	Passed	Passed	Passed	Passed
	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
General nuc.	/Failed//	/Failed//	/Failed//	Passed	Passed	Passed	Passed	Passed
	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
Mil. Performance								
Favorable end	/Failed//	/Failed//	/Failed//	/Failed//	Mixed::	Mixed::	Mixed::	Passed
	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
No escalation	/Failed//	/Failed//	/Failed//	Mixed::	Passed	Passed	Passed	Passed
	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
Alliance Cohesion								
NATO	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
	:Mixed::	:Mixed::	:Mixed::	/Failed/	Passed	Passed	Passed	Passed
	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
SWA	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////
	:Mixed::	:Mixed::	:Mixed::	:Mixed::	:Mixed::	Passed	:Mixed::	Passed
	//////////	//////////	//////////	//////////	//////////	//////////	//////////	//////////

agreement for Egypt to augment U.S. rapid deployment forces.

Both Cases A and E produced gaming outcomes in which Red was deterred from invading Iran. Either the Case A or the Case E policy package appears better than Case B.

The example lacks cost estimates and other information that would be necessary for a real case comparison, but it does illustrate how strategy might be made more robust with respect to scenarios by broadening the concept of strategic policy analysis to include elements of foreign policy.

Table 3.4

ILLUSTRATIVE COMPARISON OF FORCE STRUCTURE AND FOREIGN POLICIES

Policy/Objective	B	Case A	E
Policy			
Force structure	Baseline	Augmented	Baseline
Foreign policy	Baseline	Baseline	Egyptian Augmentation

Objective			
Deterrence			
SWA invasion	////////// //Failed//	Passed	Passed
Theater nuclear	////////// //Failed//	Passed	Passed
General nuclear	////////// //Failed//	Passed	Passed
Mil. performance	//////////		
Favorable end	////////// //Failed//	Passed	Passed
No escalation	////////// //Failed//	Passed	Passed
Alliance cohesion	//////////		
NATO	::::::::::: ::Mixed::	Passed	Passed
SWA	::::::::::: ::Mixed::	Passed	Passed

CHAPTER 4

CONCLUSIONS

METHODOLOGICAL CONCLUSIONS

The methodological question addressed by this study is whether it is practical to include credible nonsuperpower behavior in strategic analysis, given the complexity, uncertainty, and disagreement regarding nonsuperpower behavior in future military confrontations between superpowers.

This study has described and demonstrated a methodology to organize and simplify complex relationships. Scenarios reduce complexity by organizing possible events into coherent time-sequenced sets. This coherence eliminates incredible sequences of events from further consideration. The methodology uses separate models to partition political-military relationships into simpler components. Within Scenario Agent and other individual RSAC models, heuristic rules (rule-based modeling) further organize and simplify complexity. Transparency of the rules helps credibility. The integrative aspects of complexity are treated by gaming, which promotes credibility in that the competitors (human teams or computer agents) seek to further their own interests. This treatment of complexity has become practical largely because of recent advances in computer science--faster and cheaper computing, together with new languages that permit nonquantitative modeling.

The methodology deals with uncertainty by allowing systematic variation by parameter and rule changes. The parameters can be varied in sensitivity analysis. Another way to approach uncertainty, through *a fortiori* or worst-case analysis,¹ is available by changing parameters and rules or by allowing human teams to play against a superpower agent programmed to follow what appears to be the best strategy or policy.

If one tries to address all suspected uncertainties in separate analytic cases, there soon arise too many combinations to analyze.¹ The methodology helps with this combinatorial explosion by allowing more

¹ Davis and Winnefeld give an example.

cases to be run than could be handled by manual gaming. There are, of course, limits on automated war gaming resources, so means must be developed to combine or screen out less important uncertainties. Identification of nonsuperpower actions having major and minor effect on superpower decisionmaking, as was demonstrated in Chapter 3, is a start in this direction.

Real disagreements can be reflected in designing alternative cases for analysis. The methodology permits replicating and systematically varying scenarios, something that is required in a scientific approach to resolving disagreements. Model transparency also helps. Improved consistency across analyses of different strategic problems should result as libraries of rules and assumptions grow with RSAC use over time.

The primary methodological conclusion of this study is that it is practical to use a rule-based model in an automated war gaming system to factor nonsuperpower behavior into strategic analysis.

A broader, related methodological issue is whether contextual assumptions drive the results of gaming and other forms of analysis. Work by Bremer and others argues for the importance of context or environment.

We found that, with respect to some basic performance indicators, the initial system configurations or history of the simulated world is a much more important determinant of the model's behavior than the parameter variations. These findings are in accord with Herbert Simon's observation that complex behavior stems from a complex environment, not a complex entity. In this particular case, we observed a corollary of this general theorem: variation in behavior is due more to variation in the *environment* than to variation in the *entity*.²

The author's work with Scenario Agent supports this general conclusion.

² Bremer, p. 200.

STRATEGY-RELEVANT CONCLUSIONS

Given the opportunity (but not the requirement) to include nonsuperpower behavior as a factor in superpower decision rules, the writers of the Blue and Red Agent rules chose to do so. The implication is that these analysts, at least, believe nonsuperpower behavior has strategic significance.

Chapter 3 constitutes an informal "existence proof" of the possible significance of nonsuperpower behavior. A not-implausible set of alternative assumptions yielded a full range of scenario outcomes, from conventional deterrence in Iran to massive failure of nuclear deterrence. This happened not because of particular Scenario Agent nonsuperpower rules alone, but because of their interaction with superpower rules. It was the superpower rules and actions that constituted deterrence or its failure.

The strategic conclusion seems to be that context provided by nonsuperpowers may well matter. Knowing something matters, however, does not always mean we actually pay attention to it. Social pressures limit the boldness of scenarios, and models are often insensitive to what little is said about nonsuperpowers in scenarios. The behavior of the enemy superpower is more important in most situations than that of any nonsuperpower, but even the behavior of the enemy superpower is usually neglected in strategic analysis and planning.

Like members of other callings, the military people who design war plans have traditionally been subject to certain professionally-induced aversions. One is an aversion to basing any kind of plan on the assumption that the outbreak of hostilities will find us offguard or otherwise discommoded. To consider the possibility of a disaster at the outset is of course out of the question. Another is an aversion to being charged with being "defensive minded," which in practice is construed as a frame of mind that seeks to take seriously into account the possibility that the enemy, rather than ourselves might seize and hold the initiative during the crucial early phases of the war.

Official planning studies may indeed start out by including among the stated assumptions one to the effect that the enemy has seized the initiative, at least to the extent of opening the hostilities. But since its implications are too unpleasant to be borne, the assumption itself is likely to be

forgotten the moment the page on which it is announced is turned. The same fate is likely to overtake any declared assumptions to the effect that the enemy is shrewd and intelligent as well as aggressive, for if he has all these qualities and the initiative besides the outlook for us must be black indeed. The irrepressible tendency is to regard the enemy in the body of the study as rather dim-witted and passive, however respectful may have been the statements about him in the preface.³

Brodie saw war gaming as a way to give the enemy his due.⁴
Automated war gaming can do the same for nonsuperpowers.

Are we willing to assume that nonsuperpowers will be dim-witted and passive? Or should we be doing strategic analysis as though nonsuperpowers matter?

³ Bernard Brodie, *Strategy in the Missile Age*, Princeton University Press, Princeton, 1965, pp. 245-246.

⁴ Brodie, p. 386.

APPENDIX

BASELINE SCENARIO

Early Blue Efforts to Gain Support

+-----+
| RED |
+-----+

SITUATION: Red receives a request for military assistance from its client government in Iran and must select an intervention plan that fits the circumstances and Red objectives.

RESPONSE: Red sets the present day as D-day for an invasion of Iran, begins mobilizing, and deploys additional naval forces to the Indian Ocean.

RATIONALE: Red is inclined to provide assistance unless military balance considerations suggest an unsatisfactory outcome or high risk of undesired escalation. Red's intelligence estimate is that combat outcome prospects in the event of escalation in Europe are satisfactory. Intelligence estimates for SW Asia suggest Iran could be occupied successfully because of the slowness of Blue's anticipated response.

+-----+
| BLUE |
+-----+

SITUATION: Blue has received a request for military assistance from an Iranian Army faction. Blue observes early indications of Red mobilization.

RESPONSE: Blue begins preparations to counter Red militarily if necessary. Blue begins negotiations with European and Mid-East allies for permission to transit and use bases for deployment of Rapid Deployment Force. Blue requests participation by forces of UK, FRG, and France if Blue forces engage in combat.

RATIONALE: Blue believes it cannot allow Red to upset the regional security of the Persian Gulf. Blue is not prepared to project power into SW Asia until base access is obtained.

Final Preparations to Deter or Counter

+-----+
| BLUE |
+-----+



SITUATION: Red is mobilizing. Blue is getting some access to Southwest Asia.

RESPONSE: Blue alerts the RDF and begins to marshal military assets. Blue renews efforts to gain logistics and combat access and to obtain a commitment from allied countries to involve their own forces if needed.

RATIONALE: Red intentions are becoming clearer; base access rights are still not fully established.

+-----+
| RED |
+-----+



SITUATION: Red mobilization is over half complete. Red must now select a specific force employment option.

RESPONSE: Red decides to proceed with a deliberate, conventional invasion, striking Blue on D-day if necessary to preserve operations plan timelines.

RATIONALE: Noting that Blue has not yet moved forces into Iran and that Saudi bases are not yet available to Blue, Red decides to prepare for a conventional, deliberate invasion of Iran with the objective of occupying the entire country.

+-----+
| BLUE |
+-----+



SITUATION: Blue observes that Red is nearly fully mobilized in SW Asia.

RESPONSE: Blue sets DEFCON 3 and deploys the RDF to SW Asia with the intent to land in Iran if Red invades. Blue asks Egypt, Turkey, Bahrain, Kuwait, Oman, UAE, Saudi Arabia, and Qatar for a commitment of forces and permission to launch strikes from their territory, if Blue engages in combat against Red forces.

RATIONALE: Blue is prepared to defend in Iran.

+-----+
| RED |
+-----+



SITUATION: Blue has major forces en route to SW Asia. Red and Blue forces in Europe are alerted.

RESPONSE: Red decides to go ahead with the planned invasion of Iran.

RATIONALE: Red's intelligence estimate is that because of the size and closure rate of Blue forces now in motion Blue will be able to disrupt critical Red time lines, unless Red strikes Blue forces and bases on D-day.

Response to Southwest Asia Invasion

+-----+
| BLUE |
+-----+

SITUATION: Red has invaded Iran and attacked Blue forces in Bahrain, Egypt, Kuwait, Oman, Qatar, UAE, and in the Indian Ocean. Red has struck and closed the Suez Canal.

RESPONSE: Blue deploys forces into Iran and escalates the war at sea to include approaches to the theater in the South China Sea. Blue alerts SAC and NORAD.

RATIONALE: Blue regards escalation at sea to be a logical extension of the right of self-defense.

+-----+
| RED |
+-----+

SITUATION: Red has occupied northern Iran, but is faced with Blue's landings on several axes in Iran and escalation at sea. Major Blue forces have arrived in Kuwait.

RESPONSE: Red continues its campaign into southern Iran and counter-escalates at sea.

RATIONALE: Believing Red time lines are threatened by Blue naval forces, Red counter-escalates at sea, attacking Blue naval forces and shipping in the South Atlantic, as well as the Indian Ocean and South China Sea.

+-----+
| BLUE |
+-----+

SITUATION: Blue observes Red advancing southward in Iran toward ground combat with Blue forces in theater.

RESPONSE: Blue decides to defend its current positions and prepare to withdraw from Iran. Blue launches air strikes on Red forces in Afghanistan.

RATIONALE: Blue bases its decision on force closure rates.

Preparations in Europe

+-----+
| RED |
+-----+

SITUATION: Red ground forces are in combat with Blue in Iran.

RESPONSE: Red mobilizes the Warsaw Pact.

RATIONALE: Red is uncertain of achieving a favorable outcome in Iran. Red hopes to bleed off Blue resources from SW Asia and to prepare for possible conflict in Europe.

+-----+
| BLUE |
+-----+

SITUATION: Blue observes a deteriorating military situation in Iran and Warsaw Pact mobilization in Europe.

RESPONSE: Blue decides to continue current combat operations in Iran, divert RDF elements en route to Iran to the Arabian Peninsula, reinforce Europe, and request NATO mobilization.

RATIONALE: Blue does not believe it can defeat Red in Iran. Warsaw Pact mobilization is seen to demand response in kind.

+-----+
| RED |
+-----+

SITUATION: Blue is stubbornly defending lodgements in southern Iran.

RESPONSE: Red attacks Blue naval forces and shipping at sea worldwide, but avoids attacking non-Blue NATO shipping.

RATIONALE: The intent is to cut Blue-NATO sea and air lines of communication, to slow Blue reinforcement of Europe. Although the Warsaw Pact mobilization was originally intended to divert Blue resources from Southwest Asia, the deteriorating situation convinces Red that it must prepare for war in Europe and preempt Blue if necessary.

+-----+
| BLUE |
+-----+

SITUATION: Red achieves a breakthrough on the remaining axes in Iran.

RESPONSE: Blue withdraws forces from Iran. Blue mines Baltic and Turkish straits.

RATIONALE: The RDF position in Iran is considered untenable. The mining operation is considered a logical extension of the sea war in the North Atlantic.

+-----+
| RED |
+-----+

SITUATION: Major Blue reinforcements are landing in Europe and moving forward to the frontiers. The war is continuing in Southwest Asia.

RESPONSE: Red decides to invade western Europe, setting this date as D-T7.

RATIONALE: Red considers war in Europe inevitable. Red follows its doctrine of preemption in such cases.

War in Europe

+-----+
| BLUE |
+-----+
↓

SITUATION: Red strikes France and European NATO with conventional weapons.

RESPONSE: Blue defends with conventional weapons, but requests NATO nuclear release authority. Blue strikes Warsaw Pact countries, except for the Red homeland, with conventional weapons.

RATIONALE: Blue considers there to be no appreciable advantage in initiating use of theater nuclear weapons, but predicts Red forces reaching the western border of the FRG in 20 days.

+-----+
| RED |
+-----+
↓

SITUATION: Red has started to penetrate Blue defenses in the FRG. Red learns that Blue has requested nuclear release authority.

RESPONSE: Red preempts with theater and battlefield nuclear weapons in Europe and SW Asia, initiates civil defense, initiates strategic antisubmarine warfare with nuclear weapons, and neutralizes Blue satellites.

RATIONALE: Soviet doctrine rejects being preempted and Red concludes that the Blue request for nuclear release makes nuclear war likely, given NATO's losses to conventional weapons.

+-----+
| BLUE |
+-----+
↓

SITUATION: Blue and NATO forces in all combat theaters are under nuclear attack.

RESPONSE: Blue strikes Red theater nuclear forces, including those in Red homeland.

RATIONALE: Blue considers this a militarily necessary response.

World War

+-----+
| RED |
+-----+

SITUATION: Nuclear war with battlefield and theater nuclear weapons has spread to all active combat theaters. Blue homeland has not been attacked, but some missile and storage sites in Red homeland have been attacked with theater nuclear weapons.

RESPONSE: Red launches a preemptive intercontinental counterforce nuclear strike against Blue.

RATIONALE: Red considers escalation inevitable and the advantage to lie with the side that strikes first. Red's decision is supported by its estimation of the ratio of surviving nuclear hard target killers after a strike by both sides.

+-----+
| BLUE |
+-----+

SITUATION: Blue sees an incoming missile attack on its homeland.

RESPONSE: Blue launches under attack, targeting Red forces.

RATIONALE: Blue fears loss of most of its prompt general military and hard target kill capability.

+-----+
| RED |
+-----+

SITUATION: Red sees an incoming missile attack on its homeland.

RESPONSE: Red launches under attack against military targets. Red calls for a cease-fire.

RATIONALE: Red fears loss of remaining ICBMs, but sees no advantage in continuing the war beyond this strike.

+-----+
| BLUE |
+-----+

SITUATION: Considerable damage has been done to the military capability of both superpowers.

RESPONSE: Blue accepts the cease-fire and begins reconstituting its bomber force.

RATIONALE: Blue sees no advantage in continuing the war.

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